# Project Description Summary

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Our project was to be an educational program of some sort involving virtual reality. Our group has decided to create a virtual reality based product to educate young children. This product will be compatible with an HTC Vive. This program will be able to be downloaded onto a computer with a high-definition graphic card. Graphics using Unity 3D will need to be made, in a setting where virtual reality applications can be tested using controllers and screens. The main clients for this software would be grade schools and customers with children. Initially, we will have test-runs with demos of our project and have them be tested by actual teachers and prominent people in child psychology research, because they will help us improve this software to better cater to the needs of special-needs children. We have decided we will get reviews from the kids and the teachers as well, and will have meetings to discuss the changes needed to be made to the program. Since the main concentration of this project are schools, we will have different requirements, design goals, and systems design depending on the school's curriculum.

Since we have a team of people working on this project, we will have to come up with technical requirements and design goals that we must discuss with the clients and also depending on the result of the usability testing that will be performed to help improve the product. The most initially step of designing a custom product is to set the requirements for the system goals and what machine and software drivers or hardware will be required to support the application. The current system design for our application will need a high GPU machine and will consist of 2 monitors where the teacher can monitor the children's progress and the monitor will be use by user in to change lessons or to track the progress. The real consideration for this application will be use to save time and making the process more efficient and faster and hence we will use a Memento design pattern which will save the current state or data of the application when excited or unexpectedly shutdown. To save the progress and the user data we will need a database that will in for our purpose will be MongoDB because we can save multiple different type of data.

The Software architecture is another big part of this project which would require the class diagram and object diagram. The main concentration in this project are the childrens who are using it hence we are require to have a student, teacher, question, and common feature interface for which we will have to make a class. Another important aspect is to have test plans which will help us to improve the product. We will have three test phases for programmer, client and the user i.e. the children. The programmers will be able to test the logic and the system such as to test the functional and nonfunctional requirement, but the actual user interface, usability, hardware and project acceptance test will be performed at the client's location where the user input is really vital to improve the product and make it customized depending on the future refined design goals and requirements.

This product will also include various sensors that will interact with the movement of the children, so children can “move” the blocks around for the various mathematical operations, which would provide a virtual reality version of simple physical blocks. To make this possible we will have to also collaborate with the graphic designer to make the block and the pieces for which we will need a factory design pattern. Moving forward this project with the project to make sure everyone working on the project is on the same page we will have to have a set of rules and guidelines that everyone has to follow while developing. So to have this we will have some basic diagrams that are class diagram, object diagram, and the sequence diagram. Our team will have a programmer to tie the the graphic design with the programming required to implement it with the HTC Vive, but more graphic designers to design the high-level graphics needed for this project. Because of that we are also using an agile methodology in which we will be using a coding sprint with short meetings to discuss the design goals and making sure everyone is up to date with the task. We wil lalso be using like a hrechirely privilage for the tecaher compare to the students while the application is running. The task for the team will also be split according to the hirechearly manner and will be broken depending on the tier one belong. Also there's another way of improving the specific part of the application where there is a context diagram. The context diagram is like a 50,000 miles far back overview of the project where we have to look at the user and how they interact with the specific scenario. The scenarios diagram is also a thing that we will have to take into consideration where we have to add specific group members to brainstorm and add more aspect or features to it.

There are a lot of risk that comes with the project the first and most basic risk factor is that we will have to make sure that the children are safe and the VR headset does not cause them motion sickness. The another risk that we have is to lose the progress of the application and the data loss from the student. Some other risk that we have are inaccurate matric, low quality of the application, low usability for testing since we will need a large amount of sample data from the children and depending on that we will have to improve the application. Theres also a risk about the inaccurate cost of the application since there are so many variation on the curriculum of different school we will have to customize the application depending on the school and the grade.

Compiling the traditional education system with non-traditional games which are targeted towards little kids would be the best option to implement it. The kids are already used to those app games so it’ll be easier to get them engaged with the product. We will be incorporating this idea with the application and making it a useful. Since currently we are hoping that we can get this application work for the grade school students we eventually want to expand to the high level classes and eventually college. Learning with games has always been the a great experience ann our team is looking forward to make it a memorable experience.