



The Umbrella School: An Inquiry-Creativity VR School

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Abstract

Two important conclusions that can be drawn from educational research and practice are 1) that highly qualified master teachers can dramatically improve students' learning outcomes, and 2) that the use of high quality VR experiences in classrooms can enhance student learning. The idea behind the Umbrella School is to combine these two elements to create high quality VR experiences in each state for each subject matter, and grade level. These high quality VR experiences, developed and run by highly qualified master teachers, would then be accessible to regular classroom teachers and their students from around the state during the course of the regular school day. These VR experiences would be used as supplemental and enrichment materials.

Key Words: High Quality VR educational experiences, highly qualified master teachers, K-12, John Dewey, Umbrella School

1. Introduction

Two important conclusions can be drawn from educational research and practice: 1) that highly qualified master teachers can dramatically improve students' learning outcomes [1], and 2) that the use of high quality VR experiences in classrooms can enhance student learning [2, 3]. The idea behind the Umbrella School is to combine these two elements by having a cadre of highly qualified master teachers in each state create high quality VR experiences for each subject matter, and grade level, VR experiences that regular classroom teachers and their students from around the state can use "on top of" or in addition to their regular instructional offerings.

1.2 Using Highly Qualified Master Teachers to Create VR Learning Experiences

The Umbrella School requires teachers who are experts in their subject matter. Real, authentic education, Dewey says, requires educators to construct learning environments where life-like and work-like problems have to be solved, and students are given the materials, tools, and resources—things and people— with which to solve them.

Highly qualified master teachers are essential to student learning in the Umbrella School. But the costs of training highly qualified master teachers for every classroom in America is prohibitive and not politically sustainable. With the use of VR technology, however, it is possible to create a cadre of highly qualified master teachers in each state and thus create "a critical national resource that requires federal investment and cross-state coordination as well as other state and local action"[4]. The significance of viewing highly qualified master teachers as a critical resource for educational reform is not an untested notion. One need only to look at the remarkable and well known effect similar strategies had on schooling in Finland, where the quality of teachers seemed to be "the most prominent factor" in the education system's rehabilitation and the resultant widely regarded success of the "Finnish Miracle" [5]. However, despite broad acknowledgment of Finland's success, similar efforts in the States have met with trepidation and skepticism, mainly because of the cost involved.



While the cost of creating master teachers for every classroom in America may be prohibitive, it is possible to train limited numbers of highly qualified master teachers in each state who can then create high quality VR learning environments that can be used by teachers and students throughout the state.

1.3 High Quality VR Learning Experiences and Dewey's Theory of Experience

While highly qualified master teachers are most likely to be able to create highly quality VR learning experiences, their chances of doing might be better if their training included John Dewey's theory of experience. As noted at the outset of this paper, Dewey believed that where the quality of education is concerned, "Everything depends on the *quality* of the experience which is had." [4] The obvious connection between Dewey's belief that education is best done by way of experience and VR technology is that the primary contribution of the latter is its enhancement of experience. But not just any VR experience will do. So, what does Dewey mean by "experience"?

Dewey saw life and daily living as one continuous process of solving problems, small and large—What time is it? Where are my car keys? How do I get from here to there? How should I behave in this situation? What should I wear? How can I get this job? What do I need to do now? Tomorrow?—these and a myriad of similar questions constitute the kinds of "problems" we must solve just to get through the day, week, and so on. To solve our problems, Dewey says, especially when they present themselves as new problems, we adopt a kind of experimental, trial-and-error, hypothesis-testing mentality. Living becomes a kind of ongoing personal experiment (It is no accident, Dewey says, that the words "experience" and "experiment" are similar). We try things and see how they work for us. We are, in a word, pragmatists. For Dewey, then, "experience" is a process of identifying a problem, interacting with things and people in an effort to solve the problem, and reflecting on how well our actions/interactions enabled us to solve the problem or achieve our goal.

In traditional schooling, Dewey says, the problems we have to solve are all "artificial," not authentic. The problems themselves, the kinds of things or objects we have to work with, the interactions with people we have to have to solve our problems or achieve our goal—all have little connection with real life. They are remote from every day lived experiences and work. Accordingly, typical traditional school experiences are empty or meaningless.

The Umbrella School is informed by Dewey's concept of experience. Students are given the **virtual** materials, tools and people to help them solve life-like-work-like problems. The Umbrella School's VR experiences are designed to complement and enrich the traditional classroom experience and not replace it. The Umbrella School emphasizes inquiry and creativity and is built "on top of" or "over" the traditional school.

1.4 Implications of Dewey's Theory for VR Design

The Implications of Dewey's theory of experience for the design of VR learning experiences include the following design considerations:

- The VR experience should involve the solution of some problem, where "problem" means some specific goal to be achieved or obtained, or some obstacle(s) to be overcome.
- When possible, the problem's solution should result in the *creation* or *production* of some specific thing. The "thing" in this case can be a VR/digital thing, an actual physical thing, or some activity performed up to some standard or level of achievement. Examples: Repair of a virtual automobile engine; sailing a virtual ship on a discovery voyage; Establishing a town in an unsettled part of the world.
- The virtual experiences should be constructed with specific learning standards in mind, i.e., the solution(s) to the problem designed to require activities stipulated in or suggested by learning standards in social studies, language arts, mathematics, art, etc.



- The solution to the problem should be a team effort involving two or preferably three individuals, though more than three will also work, depending on the nature of the problem to be solved.
- The members of a team should be systematically matched according to individual knowledge and skill levels so that the strengths of one member can compliment or compensate for the strengths and weaknesses of other members.
- Teachers in the VR experience should be highly qualified master teachers who understand the importance of constructing learning environments that require students to solve problems by using things (tools) and collaborating with others.

Here is how teaching and learning in the Umbrella School differ from the traditional classroom:

- **Traditional:** Uniformity and uniform ways of teaching (e.g., scripted lessons) and learning are imposed from above regardless of teacher and student experience and interest. **Umbrella School:** Individual expression and cultivation of individuality.
- **Traditional:** Discipline is external and movement is constrained. **Umbrella School:** Free interaction with virtual things and people encouraged in the course of solving VR problems.
- **Traditional:** Learning is teacher centered. **Umbrella School:** Learning is student centered but teacher guided/coached; learning by doing.
- **Traditional:** Knowledge and skills useful for the future are taught. **Umbrella School:** Knowledge and skills are taught that are needed to solve present VR problems but also useful for future

1.5 Summary

Educational research indicates that learning outcomes can be dramatically improved by the use of highly qualified master teachers and by VR technology. The Umbrella School is an effort to combine both of these elements in a cost-effective way. Informed by Dewey's theory of experience, highly qualified master teachers in each state would create VR learning experiences in subject matter and at each grade level. These VR experiences could then be used to enhance the regular instructional environment.

References

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