

Executive Summary

This report provides a set of recommendations on how to incorporate a watershed education STEM curriculum into schools, specifically in 5th grade classrooms. These recommendations are for a watershed curriculum provided by our sponsors. The watershed curriculum focuses on educating 5th grade students about freshwater collection and distribution, watershed conservation, stormwater runoff, stormwater pollution, and ways to minimize and prevent harm to the environment through in-class activities and demonstrations. There is a need for this curriculum because it is important to educate the youth about the emergence of STEM, specifically the effects of stormwater runoff has on the environment.

For this project, our goal is to encourage teachers to adopt this watershed education curriculum. In order to achieve this goal, we set up the following objectives:

1. Gain an understanding of the requirements for teachers to integrate a new curriculum program
2. Find out what teachers want from a watershed curriculum
3. Create guidelines for a development program that helps teachers learn how to incorporate the new curriculum into the classroom

Our approach to successfully accomplish our objective was completed through semi-structured interviews via Zoom with people involved with the curriculum process, research on case studies and on past implementations of other curricula, and additional surveys for our interviewees. Our interviews were most successful because each individual who was interviewed was once a teacher and knew what it was like teaching 5th grade students. In addition to teaching, most have gone through the process of a new curriculum being implemented as well as having observed and participated in its adoption process.

Through these methods, our group discovered that teachers play a crucial part of the implementation process for curriculum. Although the schools make the ultimate decision in deciding the curriculum, the teachers have an influence on the curriculum they teach. Also, there

are many factors when choosing to adopt a curriculum, such as the quality of material in it (does it comply with the Next Generation Science Standards), how current the information is, and the deciding factor of price to adopt it. Next, we found out that teachers are more likely to choose a curriculum if it is easily able to be updated, if the information relates to the Massachusetts Comprehensive Assessment System (MCAS), has lessons with real-world problems, keeps teachers engaged during its development program, and is engaging for the students. Overall, a curriculum will be chosen if it is easy for teachers to use and easy for them to update.

From our findings, we came up with recommendations to further the process of implementing this watershed education curriculum. Our group suggested that there should be various additions and changes to the curriculum to make it more appealing to teachers. This can be accomplished by incorporating more real-world examples, visual elements (PowerPoints for each lesson), combining subjects into the curriculum, and having a before and after quiz to observe each student's progress. Another recommendation was to make it more engaging for the students by having more visuals to look at, hands-on activities, group work, and projects. Our last recommendation is for teachers to go through a two-day curriculum program. This program will be led by a STEM coordinator who is very experienced in teaching STEM and will focus on two different phases. The first phase will focus on teachers buying into the curriculum and wanting to teach it and the second will be learning the curriculum with the end goal of becoming more comfortable when teaching the curriculum.