The Impact on Primary Students' Achievement using a Station Rotation Model of Blended Learning

A Review of the Literature

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Introduction

Blended Learning first entered the classroom when technology became a teaching tool used by teachers. As recently as thirty years ago, teachers were using televisions and VCRs to show educational content to students in much the same way we do today with the internet. However, there are misconceptions about blended learning, what it is and what it is not. Some educators believe that blended learning is simply putting a device in a student's hand. Blended learning is not putting a tablet in a student's hand to read when their work is complete.

During the recent pandemic, teachers had to implement different styles of blended learning. Now, that the education system is finding its way back, teachers are struggling with how to implement technology in the classroom. We are seeing students in an elementary classroom who are computer literate with tablets, internet research, and many different apps and games. Blended learning is a way to meet the students where they are at by incorporating technology into the learning, giving students the freedom to learn at a pace that is best suited for their own level of academic success.

I chose this topic of research because my district is piloting a new math curriculum with fidelity in specific grade levels. The piloted curriculum is creating challenges due to the whole group instructional format. My district also implemented a non-piloted version of this curriculum where teachers are being given the freedom to choose their instructional format and implement blended learning with stations. My research focuses on how a station rotation model of blended learning affects math achievement in a second-grade classroom.

Review of the Literature

Definition of Blended Learning

Blended learning is a combination of teacher-led instruction that is face-to-face and online. It allows for content that is personalized instruction (Patrick, S. et al., 2013). According to a study by Elizabeth Anthony (2019), the blended learning model may require teachers to be more flexible and responsive to students, to integrate different sources into their formative assessments, and incorporate more rigorous learning activities. Blended learning is also defined as a formal education program in which a student has learning experience that is integrated and takes place partly online, where students have some control over the time, place, and pace of their learning. It can be partly online and partly in a brick-and-mortar location (Horn and Staker, 2015).

Types of Blended Learning

According to the literature, The Clayton Christensen Institute identifies four common types of blended learning. The four common types are Rotation, Flex, À la carte, and Enriched Virtual(CCI, 2018). According to Staker and Horn (2012), the most popular and accepted models of blended learning by educators are the Station Rotation, Lab Rotation, Flipped Classroom, Flex model.

Station Rotation

The Station Rotation is different from the other rotation models because it includes a fixed schedule where students rotate to learning stations. Students rotate to their next station when signaled by an alarm or timer. There may be two or three learning stations, but students will rotate through all of the stations within the allotted class time. This model has shown to be frequently used in schools because it is familiar to the learning centers of the past (Maxwell and White, 2017). There is not a lot of literature available that deals with the Station Rotation model in the elementary classroom (Truitt and Ku, 2018).

Lab Rotation

The lab rotation is a model where students rotate on a fixed schedule or at the teacher's discretion among locations within a school or building. At least one of the rotations is a computer lab. It differs from the Station Rotation in that students are leaving the classroom (Tkachuk, 2017). The Lab Rotation model is similar to Station Rotation. The purpose is to free up teacher time and classroom space by using a computer lab and a different teacher for the online component. Although schools have used computer labs for many years, the biggest difference today is that teachers are starting to integrate the computer time within the classroom to create seamless instruction (Horn and Staker, 2014).

Flipped Classroom

Flipped learning is a constructivist teaching method that involves the organized use of various educational strategies. The aim is to promote significant lifelong learning. Flipped learning is the flipping of the teaching process, which means the teaching does not begin with the teacher delivering content but rather with the active participation of students who act to construct their own knowledge. It then ends with the teacher checking for understanding (Lazzari, 2023). In the flipped model, videos are used to deliver the instruction to students outside of the classroom. This is meant to free up class time for hands-on learning, small group instruction, collaboration and project based learning (Webb and Doman, 2016). In regards to Bloom's Taxonomy, students in the flipped classroom are able to complete lower levels of cognitive work outside the classroom so that when they come to class, they can focus on the higher levels of learning such as application, analyzing, evaluating and creating (Basu, 2022).

Flex Model

Flex models feature an online platform that delivers most of the curriculum to students. The teachers provide on-site support that is flexible and adapted as needed via in-person tutoring or small group sessions. This model works well with the dropout-recovery and the credit-recovery blended programs (Staker, 2011). The flex model addresses students' need for autonomy in shaping their learning process. Higher educational institutions are considering replacing classroom time and offering more blended learning with the flex model, however, current research is limited regarding the effectiveness (Müller et al., 2023).

Advantages of Using Station Rotation

From a student perspective, third-grade students determined four themes to be the best part of blended learning. These include content, technology, learning, and fun. Students enjoyed playing a variety of games with various content. Students felt learning with technology helped them to learn more, it was more fun, and helped them get more instruction when they did not understand (Truitt and Ku, 2018).

A primary benefit of station rotations is that it can be used by just about anyone. Station Rotations can be used for students of all ages in any academic subject. A significant reason for the flexibility of station rotations is because of how customizable it is. The fluid teaching style allows for seamless modifications. It is easy to customize for individual students (Sands, 2017). Research shows that in an elementary science classroom, the station rotation method promotes higher order thinking (Christina, S. et al., 2019).

Barriers to Implementing Station Rotation

From a student perspective, the worst part of blended learning is the curriculum, difficulty, and technology. Some students indicated that what they were asked to do was hard.

Some students expressed that they had problems with the logins and passwords or that the software would freeze up (Truitt and Ku, 2018). Students are not often given an adequate amount of time to finish activities before having to rotate which creates anxiety (Maxwell, 2016).

Teachers also have difficulties with the station rotation model. A Station Rotation model requires that every student rotate to every station for the same amount of time. This means that students may have to rotate before they have completed their work. This limits teachers in their ability to differentiate or personalize instruction for each student. Station rotations limit student agency because of the design of moving through the same stations, in the same room, at the same time and pace (Maxwell, 2016).

Station Rotations to Teach Math

According to the research, the station rotation is more often implemented in elementary schools. It is mostly used by math teachers and teachers who teach more than one subject when compared to teachers who teach other subjects (Fulbeck et al., 2020). In a comparison study of students who were taught math by conventional methods and students who were taught math with station rotations, it was concluded that students who were taught math with station rotations had a higher mean achievement score (Akinoso et. al, 2020).

Summary

Blended learning is a combination of teacher-led instruction in a classroom and online learning that allows for teachers to deliver personalized instruction (Patrick, S. et al., 2013). Blended learning has several different models but the most popular and accepted models are the Station Rotation, Lab Rotation, Flipped Classroom, and Flex model (Staker and Horn, 2012). There are several advantages to using the Station Rotation model in the elementary classroom. A primary benefit is that it can be used for all students, at any age, and in any subject (Sands,

2017). For the purpose of this literature review, the focus and emphasis is on the Station Rotation model of blended learning and the impact Station Rotations has on the academic success of students in the math classroom. .

This Review and the Field of Education

My literature review adds to the field of education by providing resources that point to the advantages of using a Station Rotation model to teach math in the elementary classroom. As teachers incorporate technology into the classroom, it has transitioned from a teaching tool to a learning tool. Students are able to work at their own pace through the stations while teachers provide individualized instruction to students who need it. This literature review provides teachers with valuable information to help them make informed decisions about their mode of math instruction in the elementary classroom.

Strengths and Weaknesses of this Body of Literature

The strengths of this literature review is that it provides evidence that Station Rotations are successful in teaching math to elementary classroom. It provides evidence of several types of blended learning as a comparison to the Station Rotation model. The research also provides evidence that there are also negatives to using the Station Rotation model. This literature also has weaknesses due to the lack of specific research that is content specific to math. It also does not provide research on any particular math curriculum. Research is also lacking on Station Rotations specific to the primary elementary classroom.

Focus of the Current Study

The literature from this review has informed my action research project by giving me insight into looking at the students' perspectives toward blended learning and how it affects their attitude towards learning math content. The research shows that there are benefits to using a station

rotation model, but student attitudes should be evaluated. By reviewing the research, I realize I will also need to look at the duration of the stations and whether or not the students are able to move through the stations at the pace determined by the teacher.

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