Enhancing Inclusion and Critical Thinking With Station Rotation Model: A Research Proposal

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Abstract
New pedagogies are quickly entering the educational landscape as educators scramble to provide students with the 21st century skills. Station Rotation Model, a type of Blended Learning is a student-centred method that creates more engaging, productive, and goal-oriented learning environments by leveraging technology. At the same time, teachers need more than one framework to meet the needs of diverse students and turn their classrooms into flexible learning environments by following a Universal Design for Learning. This is a research proposal with the purpose to explore the implementation of the Station Rotation Model in a Primary School Classroom in Greece. Such a model will be designed based on other models found in literature and on the ADDIE method for the designing of a blended learning approach. Moreover, the model will follow the Greek curriculum, whilst in order to provide an inclusive and differentiated instruction, the guidelines of Universal Design for Learning will be taken into consideration at the time of creation and implementation of the activities/ stations. With action research, the investigator and practitioner will document and reflect on the use of such a model on a differentiated instruction and its effect on students' engagement, active participation and academic achievement. Last, the development of students' critical thinking skills will be explored as it is a crucial part of the transferable skills. The expected results point to the fact that the implemented Station Rotation Model will create an inclusive environment and have positive effects on students' engagement, academic achievement and critical thinking.

Keywords: Station Rotation Model, Blended Learning, Primary Education, Research Proposal

Introduction

The swift advancement of digital technology will continue to alter the ways in which knowledge is produced, comprehended, and conveyed, opening the door for new instructional strategies and resources. Digital innovation has the potential to revolutionise education and change how universal access to education is delivered (UNESCO, 2023). Meanwhile, new pedagogies and models are quickly entering the educational landscape as educators scramble to provide students with the knowledge and skills necessary for the 21st century (Kim, 2021; Yang & Newman, 2019).

Online and blended learning attracted the attention of many educators and researchers worldwide after the COVID-19 pandemic (Lonigro, 2021). Blended learning is a student-centred method, where there are involved features of student-teacher, student-student and student-content collaboration (Ogude & Chukweggu, 2019). It places the student at the centre of the learning process by leveraging technology to create more engaging, productive, and goal-oriented learning environments (Powell et al., 2015).

The Station Rotation Model (SRM) is one of the four rotation models that according to Horn and Staker (2015) are included in the broader term of blended learning. It includes a set of educational activities (stations) that students rotate among during class time, depending on the subject or course. The students can rotate in groups at the stations that the teacher has set up in one classroom or several classrooms (Staker & Horn, 2012). SRM could be used to connect a previous topic to a new one, review a unit, or introduce a new one (Hite et al., 2022). A teacher-led station, small group work, and at least one station for online learning is typically included. There might be other stations like individual tutoring, pencil-and-paper assignments, small group instruction, manipulatives and group projects (Hover & Wise, 2020; Novak & Tucker, 2021; Staker & Horn, 2012; Walne, 2012).

SRM appears to be a promising strategy with several advantages for both the teachers and the students. The utilisation of project-based learning as a station to go along with the online learning station is also made easier by this concept. The learners can construct the knowledge individually by doing problem analysis or collaboratively building the understanding together with their peers, something that could be an important factor for the development of critical thinking (Othman et al., 2016; Prasetya, 2016). Critical thinking is an imperative transferable skill for students, because it enables them to analyse and compare information as well as construct arguments (Basri et al., 2019).

On the other hand, teachers need more than one framework to meet the needs of diverse students and turn their classrooms into flexible learning environments. Therefore, they can achieve this by connecting Blended Learning Models with the Universal Design for Learning (UDL) (Novak & Tucker, 2021). It is important to offer an inclusive environment to all students, bearing in mind not only the emerging number of learners with special educational needs (UNICEF, 2021), but also that each and every student will benefit from a differentiated instruction (Hite et al., 2022).

The rapid growth of the implementation of blended learning has created a gap in research in primary education. The majority of studies of SRM are focused on secondary settings, on higher education and/ or vocational training, even though it seems to be a quite popular and common approach in primary education (Fazal & Bryant, 2019; Fulbeck et al., 2020; Lonigro, 2021). Therefore, there is a need for more evidence-based research on a primary

setting. Moreover, literature shows that there are more studies focusing on the blended learning approach of flipped classroom, rather than the Station Rotation Model (Lonigro, 2021; Truitt, 2018; Yang & Newman, 2019). In the study proposed, a primary school setting was chosen for the implementation of the SRM, firstly due to the gap on research, and secondly to ensure equity related to access to technological devices with an in-class implementation. In addition, the Greek educational setting was chosen because of the familiarity and personal interest of the researcher-practitioner and because no similar research has been conducted till now in Greece. Last, studies in varying context and population could bring value to other investigations carried out so far, as technology and pedagogy constantly evolves (Ioannou et al., 2020).

The originality of this research lays also on the fact that a combination of a blended learning approach and UDL guidelines will be done. Inclusion of all students with an opportunity to differentiate instruction is imperative as it can help them develop the transferable skills needed for the 21st century carriers (Kim, 2021). As Fulbeck et al. (2020) highlighted, there is still more to learn about the SRM as an approach for differentiation and personalised learning, so future studies could be carried out on understanding student engagement through this approach. In addition to the above, according to Lonigro (2021), SRM could be used as a model to address some of the problems generated from the Emergency Remote Teaching during the pandemic, like for example students' low engagement, the need for more collaborative and inclusive practices and thereafter the need for the teacher to work with smaller groups of students.

The purpose of this study is to explore the implementation of the Station Rotation Model in a Primary School Classroom in Greece. An SRM will be designed based on other models found in literature and on the ADDIE method for the designing of a blended learning approach (Branch, 2009). Moreover, the model will follow the Greek educational system and curriculum, whilst in order to provide an inclusive and differentiated instruction, the guidelines of Universal Design for Learning (CAST, 2018) will be taken into consideration at the time of creation and implementation of the activities/ stations. With action research, the investigator and practitioner will document and reflect on the use of such a model on a differentiated inclusive instruction and its effect on the engagement of students and their academic achievement. Last, the development of students' critical thinking skills will be explored as it is a crucial part of the transferable skills (Basri et al., 2019) and at the same time because the research about critical thinking in Greece is still at early stages according to the literature review of Fountzoulas et al. (2019).

Objectives and Research Questions

The project objectives are considered as an important part of the research design. Research should not simply embark on an investigation without stating the reasons for it (Thomas, 2013). It is about stating what the project is supposed to achieve. In particular, this study has the following objectives:

General Objective

To design, implement and evaluate the Station Rotation Model in a Primary School classroom in Greece.

Specific Objectives

- To design and implement an SRM on a primary school classroom in Greece based on existing models in literature and utilising the ADDIE model for blended learning design.
- To adapt the SRM to the educational program of a primary school classroom that follows the Greek educational system and curriculum.
- To incorporate the UDL guidelines into the creation and implementation of the activities/ stations to provide inclusive and differentiated instruction.
- To explore students' and teacher's perceptions and experiences on the implementation of the SRM as well as the perceptions of the implicated families.
- To evaluate the effectiveness of the SRM in promoting students' engagement and academic achievement.
- To investigate the impact of SRM on the development of students' critical thinking skills.
- To determine the effectiveness of the Station Rotation Model in enabling inclusive and personalised teaching that caters to the needs of all learners, including those with the most learning difficulties.
- To provide recommendations for further improving the implementation of the adapted SRM in Primary School classrooms in Greece.

Research Questions

Having established the topic to be investigated and the nature of the objective to be fulfilled, the ideas should take the form of a more specific question or questions that will form the basis of the research (Thomas, 2013). The central questions of the project are:

- How effective is the Station Rotation Model, adapted to the Greek Curriculum and incorporating UDL's guidelines, in promoting students' engagement, their academic achievement and lastly their critical thinking skills?

- Does the Station Rotation Model allow for inclusive and personalised teaching appropriate to the development of the abilities of all learners, including those with the most difficulties?

Methodology

At a first stage, for the exploration of the theoretical background, a Systematic Literature Review (SLR) will be conducted with specific inclusion, exclusion and quality criteria the relevant studies around the word regarding the state of the research question (García-Peñalvo, 2022) following the guidelines of PRISMA (Page et al., 2021). At a second stage, a preliminary study will be conducted. The research methodology to be used is the action research with a mixed method approach. Action research is "research that is undertaken by practitioners for the purpose of helping to develop their practice and it is usually done at the same time as performing that practice" (Thomas, 2013, p.249). Action research is very typical in educational contexts, as the researcher and practitioner could be the same person and it could be used as a process to improve the educational practice, implement a new instructional method, improve the curriculum, solve issues among students or school members (Hine, 2013; Lufungulo et al., 2021). In the case of this study, I will be the researcher and teacher to implement the new instructional approach and reflect on the use of

the Station Rotation Model in my classroom. One cycle of the action research will be documented.

Regarding the sample of the study, this will be a classroom of a public Primary School in West Attiki, in Greece. As it will be an action research, the sample is a convenience sample and closely related to the researcher and practitioner, who will implement the new method and try to enhance the engagement of students as well as their critical skills.

The literature has long explored the benefits of the mixed method approach. It employs both qualitative and quantitative methodologies, either simultaneously or sequentially, resulting in data triangulation that improves the results' validity (Thomas, 2013; Yilmaz, 2013). For this study, more than one method will be used to collect data. For the data collection will be used: questionnaires, participatory observation, rubrics, research journal, focus group and interviews.

For the analysis of data, thematic analysis will be used for all the qualitative data following Braun and Clark (2006) guidelines and with the use of ATLAS.ti 9. On the other hand, statistical analysis will be used for the quantitative data (Miller & Brewer, 2003) and it will be facilitated with the use of SPPS v27 tool. All the ethical considerations will be taken into account throughout the study following the guidelines for educational research of the British Educational Research Association [BERA] (2018).

Apart from the above, it is important to mention that the instructional design method to be used for the designing of the blended learning approach is the ADDIE, which stands for Analyse, Design, Develop, Implement, and Evaluate. “It is a product development paradigm and not a model per se”. ADDIE is a systematic development of a course/ product with the educational philosophy of a student-centred intentional learning (Branch, 2009. p.1). Even though it is usually used in Higher Education, the basic steps of this approach could be taken into consideration in this study as SRM is a type of blended learning approach with the same purpose to create an effective and inclusive learning environment.

Conclusion

As educators strive to give students the skills they need for the 21st century, new pedagogies are swiftly making their way into the educational environment. Blended learning places the student at the centre of the learning process by leveraging technology to create more engaging, productive, and goal-oriented learning environments (Powell et al., 2015). According to Horn and Staker (2015), Station Rotation Model is considered part of Blended Learning. Students rotate in groups around a set of educational activities; and it typically includes: A Teacher-led station, Group work and at least an Online station (Staker & Horn, 2012). On the other hand, teachers need to create flexible learning environments in order to meet the diverse needs of students. Novak and Tucker (2021) suggest that this could be accomplished by fusing the Universal Design for Learning (UDL) and Blended Learning Models.

This paper aims to present a research proposal as part of a PhD programme. It intends to design, implement and evaluate the Station Rotation Model in a Primary School classroom in Greece, following the UDL principles. With action research, the investigator and practitioner will document and reflect on the use of such a model on a differentiated inclusive instruction and its effect on the engagement, academic achievement and critical thinking of students.

As it is an action research method a continuous reflective process will be made which might slightly change the research questions. According to literature findings it is expected to observe positive effects on student engagement and academic achievement and their critical thinking skills. It will be also important to explore how this educational methodology will affect the inclusion of all students.

Finally, it is important to mention that the progress of the study, the changes made and the results will be published in the portal of the PhD programme as well as in other conferences.

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