Student Article

# Teachers' Perspectives of Station-teaching in Mathematics in an Irish Primary School

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Eimear O' Connell graduated from the Professional Master of Education (PME) programme at Mary Immaculate College, Co. Limerick in 2019. Eimear completed an undergraduate Bachelor of Science Degree in Physiotherapy in the University of Limerick and worked as a physiotherapist in the public sector prior to her completion of the PME programme. Her interest in team-teaching and a passion for mathematics inspired this work investigating teacher's perspectives of station-teaching in Mathematics in the primary school classroom.

**KEYWORDS:** Team Teaching, Station-Teaching, Mathematics Education, Primary Education

## INTRODUCTION

Co-teaching has been defined as two or more teachers sharing responsibility for teaching some or all of the students in a classroom (Villa, Nevin, & Thousand, 2004). In Ireland, the Department of Education and Science (DES) (2007) and the Professional Development Service for Teachers (PDST) (2019) use the terms co-teaching and team-teaching interchangeably. The DES (2017a) recommend that teachers engage in team-teaching to address children's specific learning needs. Furthermore, Irish research by McCoy (2011) reported that an eight week co-teaching mathematics intervention had positive outcomes for students in one class who had been previously identified as experiencing difficulty in relation to mathematics. Statistically significant improvements were reported in their mathematical attainment and these students reported increased confidence and a more positive attitude towards mathematics following the co-teaching intervention.

The Professional Development Service for Teachers (PDST) (2018) identify five models of co-teaching:

1. Station Teaching
2. Lead and Support
3. Parallel Teaching
4. Alternative Teaching
5. Teaming.

Irish primary school teachers have the autonomy to select which model they wish to use. Research reports that station teaching is the most common model of team-teaching in Irish primary school classrooms (Casserly & Padden, 2018; Mahon, 2015). In the station-teaching model, children rotate through stations where they receive instruction from the teacher or complete activities independently (Friend, 2016). Station-teaching was specifically advocated as an approach that may be used to target the promotion of language, literacy and numeracy skills in the Guidelines for Primary Schools Supporting Pupils with Special Educational Needs in Mainstream Schools (DES, 2017b). Research by McMahon (2015) and Cull and Travers (2018) focused on the impact of station-teaching in mathematics specifically. Improvements were reported in students' participation levels and students reported enjoying completing their mathematics lessons using the station-teaching model as they found that it was an easier way to learn mathematical skills (McMahon, 2015).

More recently, Cull and Travers (2018) used the station-teaching method in one multi-grade class in a rural Irish primary school and reported that this was an effective intervention for developing key competencies in numeracy. However, a consultation report for the new primary mathematics curriculum reported that schools need support in how to set up and implement team-teaching (National Council for Curriculum and Assessment, 2018). Additionally, the paucity of research available in relation to station-teaching in mathematics, has been identified in educational discourse and further research has been advised to inform educational practice (Dillane, 2016; McMahon, 2015).

This research study sought to investigate station-teaching as a teaching methodology in primary school mathematics in Ireland. The research question for this study was: what are teachers' perspectives of station-teaching as a teaching methodology in primary school mathematics? It is hoped that the findings from this research study may inform teachers who are considering implementing this approach. This research will provide information regarding the benefits and challenges associated with this station teaching and in relation to its implementation in educational practice. Furthermore, the perspectives of teachers regarding

the benefits and challenges of implementing this approach may be beneficial to inform future policymakers when creating policies regarding teaching methodologies in numeracy.

## CONTEXT

There has been a significant emphasis on the teaching of literacy and numeracy in Ireland in recent years. Ireland's poor performance in national and international literacy and numeracy assessments (PISA 2009), led to the publication of the National Strategy: Literacy and Numeracy for Learning and Life 2011 – 2020 (DES, 2011). The national strategy aimed to improve literacy and numeracy among children and young people in Ireland. It recommended that all children should have the opportunity to regularly engage with learning approaches including cooperative learning, active learning, differentiated learning and problem-solving activities. When these approaches are implemented they result in more effective learning and in increased participation and enjoyment (DES, 2011).

Subsequently, it was reported in the Literacy and Numeracy Strategy Interim Review (DES, 2017c) that National Assessments of Mathematics and English Reading (NAMER) revealed the first significant improvements in the performance of primary school children in English reading and mathematics in over thirty years. Improvements have been attributed to the efforts made to reduce the impact of educational disadvantage and to facilitate greater inclusion in the classroom (Clerkin, Perkins, & Chubb, 2017).

Co-teaching is one method of teaching that is proposed to facilitate inclusion. This teaching approach originated in the USA in the 1960s. It was developed in response to legislative changes to include students with Special Educational Needs (SEN) in the general education classroom so that they could learn alongside their peers (Friend, 2016; Villa et al., 2004). More recently in Ireland, the Chief Inspector's Report (DES, 2018) encouraged schools to explore models of in-class support rather than relying on withdrawal for children with SEN. This was also supported by Circular No. 0013/2017 (DES, 2017a) and in the Guidelines for Primary Schools Supporting Pupils with SEN in Mainstream Schools (DES, 2017b). The range of teaching methods suggested by these documents include team-teaching, small group teaching and, where deemed necessary, individualised teaching to address specific learning needs. Circular No. 0013/2017 (DES, 2017a) asserts that team-teaching has been shown to provide an appropriate model for the needs of individual pupils in a collective setting in their own classroom and may have the additional benefit of qualifying pupils receiving more support than traditionally. In addition to facilitating inclusion, educational discourse also reports that

co-teaching is of benefit to all class members, not just those with SEN (Villa et al., 2004) and that effective co-teaching can result in the academic improvement and social skill development of all of the children in the classroom (Prizeman, 2015; Scruggs, Mastropieri, & McDuffie, 2007).

## METHODOLOGY

In this research study, qualitative data was collected using a case-study approach. A case-study was selected in order to explore co-teaching from a holistic perspective. It allowed the researcher to explore teachers' perspectives of station-teaching in mathematics in one school setting, while considering the impact of the whole-school environment. Institutional ethical approval for this research study was granted. Non-probability sampling, in the form of both convenience and volunteer sampling, was employed in this case-study in order to identify a potential school and research participants. This case-study focused on one school in Munster that participated in Band 1 of Delivering Equality of Opportunity in Schools (DEIS).

Data was collected from a variety of sources. Firstly, examination of relevant school policies in relation to team-teaching and station-teaching specifically were analysed to reflect the school's commitment to this approach. Secondly, semi-structured interviews were conducted with four teachers in the school and the interviews were recorded using a dictaphone. Additional data was gathered from the researcher's own lesson plans and reflective practice portfolios completed in relation to station-teaching in mathematics specifically.

The data in this research study was analysed using an inductive approach. The process of thematic analysis recommended by Braun and Clarke (2006) was used to identify, analyse and report themes that emerged from the data. The researcher first familiarised themselves with the data by transcribing the interviews, reading the school policies and reading the researcher's reflections. The data was re-read and then coded; these codes were subsequently collated into potential themes and sub-themes. The themes and sub-themes were reviewed in relation to the whole data set and a thematic map was created. Ongoing analysis was performed to refine each theme. Finally, further analysis was undertaken while writing the research findings to ensure that the analysis related back to the research question and previous educational literature. The generalisability of the findings of the research study are limited by the specificity of the case-study approach, the small sample size and the use of non-probability sampling.

## FINDINGS AND DISCUSSION

The themes and sub-themes that emerged from the data analysis process are presented in the thematic web below. As this research paper provides a snapshot of a larger body of work, this discussion will focus on one of these themes: the school's whole school approach to team-teaching and more specifically, station-teaching. Educational literature reports that in order for team-teaching to be implemented successfully, a whole-school commitment to its implementation is required (Friend, 2007; Prizeman, 2015) . The school that participated in this case-study demonstrated clear evidence of a whole-school approach towards the promotion of team-teaching.
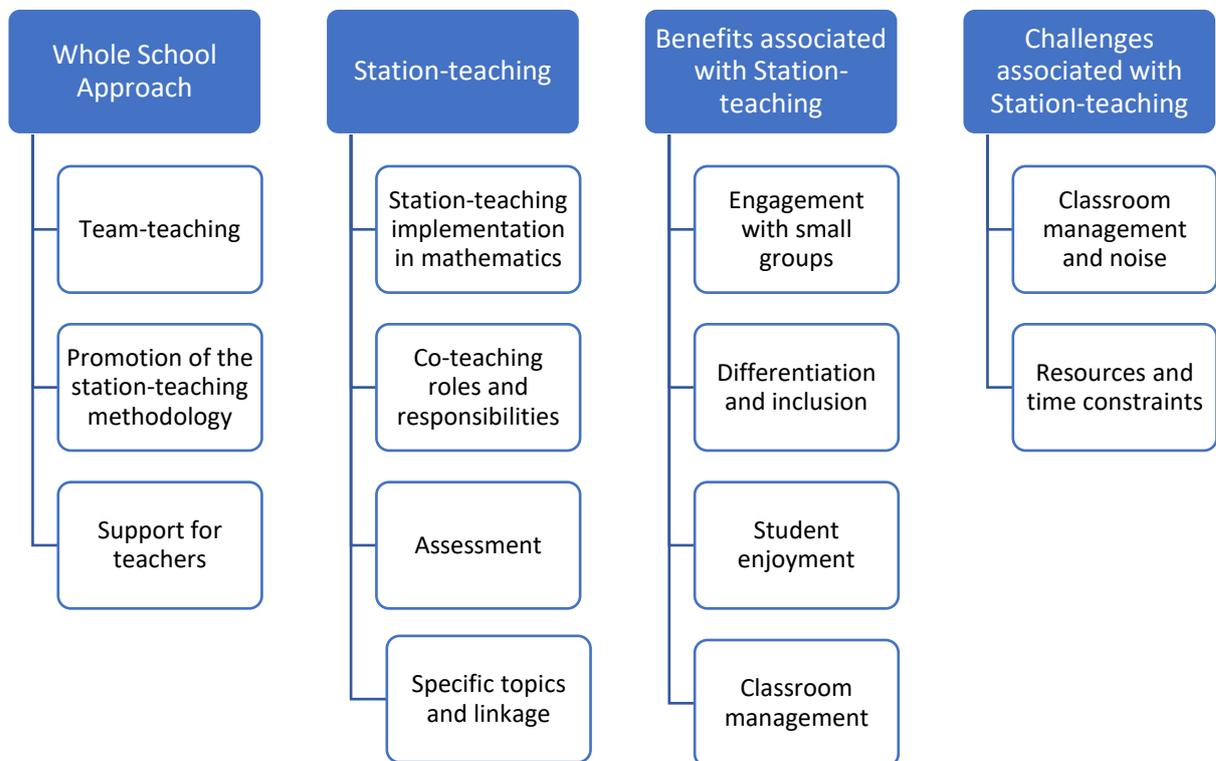


*Figure 1 Thematic web showing the themes and sub-themes that emerged from the data.*

While the case study school did not have a specific policy in relation to team-teaching, analysis of the school's other policies indicated a commitment to team-teaching, specifically in relation to numeracy. For example, one of the actions of their Numeracy Action Plan for 2017-2018 was the *"use of team-teaching in Numeracy"*. Similarly, according to their DEIS 3 Year plan 2016-2019, a target for the 2018-2019 school year was *"to continue to monitor methods of team-teaching in numeracy"*. This is similar to previous research conducted in the Irish context which reported that co-teaching was part of school policy in 82% of schools (Mahon, 2015).

In relation to catering for children with SEN, there was a clear emphasis on in-class support, in the form of team-teaching, in contrast to withdrawal. For example, Teacher 3 (T3) reported *"the children remain in class for literacy and numeracy for the entire week, so they are not withdrawn for that time"* and T2 stated that *"the SET never takes any of them out for maths. Always in the classroom for maths."* However, it was acknowledged that some children may require a combination of team-teaching and withdrawal to meet their educational learning needs, *"there might be a need to withdraw that child and give them that bit of extra support"* (T1). This is in accordance with Circular No. 0013/2017 which recommended that team-teaching approaches may be combined with withdrawal for intensive teaching based on the individual child's needs (DES, 2017a).

All teachers described a variety of team-teaching methodologies that they employ as part of their mathematics lessons. These included parallel teaching, one lead and one support and station-teaching. For example, T3 stated that *"we use parallel teaching just to introduce the topic at the start"* and T1 stated that *"there are times it will be teacher-led where I'm just assisting".* This is similar to previous Irish research which found that teachers who were experienced in co-teaching used a variety of co-teaching approaches to meet the needs of their students (Mahon, 2015).

In relation to the station-teaching model specifically, a review of this school's policies highlighted the promotion of this model of team-teaching in numeracy. *"To implement station-teaching for numeracy throughout the school"* was stated as both an action of the Numeracy Action Plan for 2017-2018 and as a target of the DEIS 3 Year plan prioritising numeracy for the 2017-2018 school year. Additionally, all interviewees reported using station-teaching in mathematics and demonstrated a very good understanding of this methodology. For example, as stated by T3, *"you'd have the class teacher and the SET at a station each guiding it and you'd have one to two independent stations depending on the levels of abilities in the classes."* Similarly, T4 commented *"Sometimes the children might move, sometimes the teachers might move, it just kind of depends on the class group and differentiated for each class group."* The station-teaching approach began in relation to literacy and has now been introduced for numeracy as stated by T1, *"we have station-teaching in English and in maths, now as a school we got the literacy side of things going first."* This may reflect the findings of the Literacy and Numeracy Strategy Interim review (2017c) which reported that there was a greater focus on literacy in schools initially following the publication of the strategy.

The emphasis on station-teaching in numeracy throughout this school was also apparent when teachers discussed the level of support and training for teachers that is facilitated in relation to this teaching methodology. While T3 reported no formal training in station-teaching, they stated that *"within Croke Park hours now we have discussed it at length".* Additionally, T1 reflected that the week before the interview they were *"at a day's PDST training for team-teaching and station-teaching primarily for maths".*

Furthermore, the teachers described the role of a Numeracy Co-ordinator who visits the school and supports the teachers to implement new initiatives. Teacher 1 stated *"we are very lucky where we have the initiative teacher coming in…. who is trying to get station-teaching up and running in as many classes as possible."* In addition to the Numeracy Co-ordinator, T3 commented on the support that is available within the teaching staff, *"various teachers, some have an awful lot of experience of it".* It is clear that this school provides opportunities for professional development and support in relation to co-teaching, which has been recommended in order to ensure its successful implementation (Friend, Cook, Hurley-Chamberlain, & Shamberger, 2010) and may be useful for other schools considering implementing this approach.

## CONCLUSION

The following provides a summary of the key findings from this case-study. As mentioned previously, this research paper provides a snapshot of a larger body of work and the discussion focused on one of the themes: the school's whole school approach to team-teaching and more specifically, station-teaching. Station-teaching was promoted as a teaching methodology to be employed in mathematics throughout the whole-school. Teachers received support for its implementation through training and from interactions with other teachers within the school.

Findings from the other themes explored in the study as a whole demonstrated that teachers implemented station-teaching in mathematics once or twice a week and either two or three teachers were present to deliver this methodology. Most teachers used ability grouping and children were facilitated to work independently or in groups to complete a variety of activities. Teachers reported benefits associated with station-teaching in mathematics in relation to engaging with children in small groups, catering for the diverse needs of the children in the classroom, classroom management and student enjoyment. Challenges associated with station-teaching were classroom management issues, noise and constraints with time and resources. The majority of teachers reported that it was an appropriate methodology to use for

all of the strands of the mathematics curriculum. Additionally, it was identified that station-teaching was particularly useful to facilitate linkage between strands in numeracy.

RECOMMENDATIONS FOR PRACTICE, POLICY AND FUTURE RESEARCH

- In relation to educational practice, it was clear that the implementation of station-teaching as a teaching methodology in mathematics benefited from a whole-school approach. This philosophy could also be replicated in other Irish primary schools in order to realise the positive impact of this methodology in mathematics teaching.

- This research identifies that schools require a significant amount of resources, support and training in order to implement station-teaching. Future educational policy should consider the provision of staff and training to alleviate the challenges associated with station-teaching, in order to ensure that this approach may be a feasible methodology in mathematics in Irish primary schools.

- As this research study was limited to the perspectives of teachers regarding station-teaching, future research should also consider the opinions of other stakeholders such as the children, principals and parents on a larger scale and in a variety of schools.

- A longitudinal research study could also seek to identify the most effective ways to implement station-teaching in mathematics to support the academic and social skill development of all children in the Irish primary school classroom.

## ACKNOWLEDGEMENTS

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