

EAST RENFREWSHIRE COUNCILEDUCATION COMMITTEETHURSDAY 23 JUNE 2022Report by Director of EducationREPORT OF THE IMPACT OF THE NUMERACY AND MATHEMATICS STRATEGY 2018-2021**PURPOSE OF THE REPORT**

1. The purpose of the report is to update Education Committee on the progress and impact of Numeracy and Mathematics Strategy across East Renfrewshire ELC settings and schools. The report outlines the steps taken to improve further the attainment, achievement and experiences of children and young people in numeracy and mathematics across East Renfrewshire.

RECOMMENDATION

2. Education Committee is asked to note and comment on the progress of the delivery of Numeracy and Mathematics Strategy and the proposed next steps as outlined in this report.

BACKGROUND

3. In September 2016, the Scottish Government published its [Making Maths Count Report: Transporting Scotland into a Maths Positive Nation](#). This report indicated that Scotland had a maths problem and focused on 3 key areas for improvement:

- Transforming public attitudes to maths.
- Improving confidence and fluency in maths for children, young people, parents and all those who deliver maths education to raise attainment and achievement across learning.
- Promoting the value of maths as an essential skill for every career

4. In response to Making Maths Count report and the wider national improvement agenda a Strategic Steering Group was established in East Renfrewshire with the task of producing a Numeracy and Mathematics Strategy that would lead to improvement in not only the 3 key areas identified in paragraph 3 above but in response to the specific needs of the learners, staff and parents in East Renfrewshire.

5. As well as the Making Maths Count report, the strategy took cognisance of the Education Department's previous Numeracy and Mathematics review undertaken by the department in 2011.

6. Education Committee approved in May 2018 the Education Department's [Numeracy and Mathematics Strategy](#) which outlined the ambition for all children and young people within the context of numeracy and mathematics.

7. The strategy identified six key aims over a three year period and a clear set of actions for the department, Early Learning and Childcare (ELC) settings and schools to undertake in order to deliver these aims.

8. The Numeracy and Mathematics Strategy aimed to improve:

- outcomes and reduce inequalities in numeracy & mathematics development;
- attainment in numeracy & mathematics throughout the years of the broad general education and senior phase;
- confidence and fluency in mathematics for children, young people and parents and all those who deliver mathematics education;
- the employability skills of pupils, school leavers and adults;
- the quality of learning, teaching and assessment; and,
- public attitudes to numeracy & mathematics.

9. Alongside the aims set out in the strategy there were a set of Key Performance Indicators and Targets. Progress in relation to these indicators can be found in Appendix 1.

10. In March 2020 the COVID-19 pandemic occurred, resulting in full scale disruption not only to Education but to society as a whole. Advancement in the implementation of the strategy was severely impacted, however the Education Leadership Team, in the context of building back better and fairer, were committed to gaining evidence of impact of the strategy. The Education Department was also committed to supporting schools as part of their recovery agenda, ensuring improved outcomes for all learners.

REPORT

11. With colleagues in Education Scotland and the Association of Directors of Education Scotland (ADES) a Collaborative Improvement Model was developed to enable a partnership approach to reviewing progress and impact of the strategy in terms of learners, staff, parents and wider partners.

12. The purpose of Collaborative Improvement is to share what works well at a local authority level and to support improvement in identified areas of local authority activity.

13. This model was part of a national approach developed by ADES and Education Scotland, designed to support improvement, with an expectation that all Local Authorities will take part over a 3 year period.

14. East Renfrewshire volunteered to take part this year as part of our approach to reviewing progress and impact of Numeracy and Mathematics strategy, seeking specific support and challenge around the improvement in this area, the impact of Covid and next steps for curricular leaders.

15. The review took place over 3 phases:

- Phase 1 - planning and preparation to determine the scope of the review and engage in professional learning to support the process.
- Phase 2 - evidence gathering which included observations of learning and teaching, gathering people's views, analysing quantitative and qualitative data and reviewing relevant documentation.

- Phase 3 - collaborative improvement where partners worked together to analyse evidence gathered ensuring that we achieve sustainable improvements for all children and young people, including those from disadvantaged backgrounds.

16. The review team for phase 2 was made up of colleagues from ADES, Quality Improvement Officers, Head Teachers and Maths Champions (a nominated staff member from ELC settings and Primary Schools with a responsibility for promoting maths).

17. The review team observed learners' experiences in 14 establishments; 1 special school, 2 ELC settings, 9 primary schools and 2 secondary schools through 97 learning visits; analysed 7185 questionnaire responses from pupils across primary, secondary and special sectors; analysed 398 questionnaire responses from parents across the authority; conducted focus groups with Maths Champions, staff groups, pupil groups, Principal Teachers of Maths, Developing the Young Workforce Leads, Head Teachers, Cluster Chairs, Adult Learning Service and the Strategic Numeracy and Mathematics group. The review team also took account of performance data, planning and assessment documentation and any other relevant information as requested.

18. Colleagues from Education Scotland and members of the Education Leadership Team took part in phase 1 and phase 3 of the process.

19. The overarching theme of the review was:

- ***How effective is the Education Department at ensuring the numeracy and mathematics strategy results in improved experiences and outcomes for all learners?***

The review team explored the following key questions with the report also structured under the same headings:

- *What does attainment in Numeracy and mathematics look like?*
- *What do experiences in Numeracy and Mathematics look like?*
- *What do stakeholders tell us about how they are learning in numeracy and mathematics? To what extent do they find it relevant?*

What does attainment in Numeracy and mathematics look like?

20. Attainment across all sectors is very strong. The ambition and drive to be the highest performing mainland authority is evident in the approach to tracking attainment, right down to individual pupils. Performance data demonstrates that the closing of the poverty related attainment gap and raising the bar for all has been curtailed somewhat given the impact of Covid-19. However in 2020-21, East Renfrewshire was the highest performing Local Authority in numeracy at P1, P4, P7 and P1, P4, P7 combined and the senior phase performance in numeracy and mathematics was much better than the national average and our virtual comparator.

Baseline Assessments and Developmental Milestones

21. A Baseline Assessment has been in place since 2005-06 to assess children's attainment in literacy and numeracy on entry to primary one.

22. The authority average for percentage of numeracy questions correct (raw scores) was the highest recorded at 61%; up from 59% from last session.

23. There continues to be a gap between the attainment of those living in SIMD 1-3 and those in SIMD 8-10. This poverty related attainment gap has remained at 9 points for numeracy

Achievement of Curriculum for Excellence Levels (ACEL)

24. Overall primary attainment (based on P1, P4 and P7 pupils combined) in numeracy and mathematics has decreased slightly over the past 3 years from 90.8% to 89.9%. East Renfrewshire performs well compared to the latest national average of 74.7%. In 2020-21 East Renfrewshire was the highest performing LA in numeracy at P1, P4, P7 and P1, P4, P7 combined.

25. The table below provides more detail of the numeracy performance in 2020-21 in comparison to the national average.

2020-21	P1	P4	P7	P1, P4, P7 Combined	S3 (Fourth Level)
ERC	91%	90%	89%	90%	No Data
National	81%	72%	72%	75%	No Data

26. From 2016/17-2020/21 the average percentage of P1 pupils achieving early level in numeracy has been 93%. For the same period, the average percentage of P4 pupils achieving first level in numeracy has been 90% and at P7 for the same period, the average has been 88%. Across the three years from 2016/17- 2018/19, 77% of S3 pupils have achieved the fourth CfE level in numeracy. At all stages, the ERC performance was well above the national average.

27. The gap between learners residing in quintile 1 and quintile 5 achieving the expected numeracy levels in primary school (based on P1, P4 and P7 combined) decreased from 21% in 2016-17 to 13% in 2018-19. In 2020-21 it increased to 17%. However, as the table below shows since 2017-18 the attainment gap in ERC has been below the national average; in addition attainment in quintiles 1 and 5 is consistently above the national average. This data demonstrates that the strategy was helping to raise the bar for all and close the poverty related attainment gap.

ERC – Numeracy Attainment (P1, P4 and P7 combined)

	2016-17	2017-18	2018-19	2020-21
All	90%	91%	91%	90%
Quintile 1	73%	82%	80%	77%
Quintile 5	94%	93%	93%	94%
Gap (Q1-Q5)	21%	11%	13%	17%

National – Numeracy Attainment (P1, P4 and P7 combined)

	2016-17	2017-18	2018-19	2020-21
All	76%	78%	79%	75%
Quintile 1	69%	71%	72%	65%
Quintile 5	86%	88%	88%	86%
Gap (Q1-Q5)	18%	17%	17%	21%

28. East Renfrewshire recorded the third and second highest reduction of the gap in literacy and numeracy respectively in 2018-19 nationally, from an already strong position of having one of the lowest gaps across Scotland initially.

29. In 2020-21 the gap between these groups of learners increased and consequently the reduction in the gap since 2016-17 is now less impressive at 0.8%, 3%, 7.7% and 9.5% in each curricular area.

Senior Phase and Adult Learners

30. Learners consistently perform strongly in National 5 Mathematic and Applications of Mathematic with an increase in A-C awards over the last 3 years; from 91% in 2018-19 to 93% in 2020-21. The proportion of learners achieving A-C grades remains above the national averages of 61% in 2018-19, 76% in 2019-20 and 68% in 2020-21. Presentations in S4 at National 5 have increased slightly over the past five years as a result of the introduction of Applications of Mathematics. In 2020-21, 81% of S4 learners were presented at National 5 level across both qualifications; this compares favourably with the national trend which has remained below 60% for the same measure over the past two years.

31. Similarly, over the past 3 years learners have performed very well in Higher Mathematics – with 88%, 91% and 90% achieving A-C awards in 2018-19, 2019-20 and 2020-21 respectively. The proportion of learners achieving A-C grades remains consistently above the national averages of 75%, 84% and 80% in 2018-19, 2019-20 and 2020-21 respectively. This is within the context of high presentation levels, with approximately 57% of S5 pupils in East Renfrewshire being presented for higher maths over the last 3 years compared with approximately 30% of learners nationally

32. The percentage of learners achieving A-C awards at Advanced Higher has increased over the last 4 years from 75% in 2018 to 87% in 2021.

33. The percentage of learners achieving Level 4 Numeracy from 2018-19 to 2020-21 has remained consistent at 97%. The percentage of learners achieving Level 5 Numeracy from 2018-19 to 2020-21 has been 88%, 87% and 88% respectively.

34. School leaver destinations remain consistently high and above the national average. Initially in 2020-21, 97.4% of leavers were in a positive destination (higher education, further education, employment, training and voluntary work), above the national average of 95.5% and our virtual comparator of 97.3%. This is an increase of 1.2% from 2019-20, and more in line with the figure for 2018-19 of 97.5%.

35. In addition, the latest participation data (2021) indicated that 97.2% of ERC 16-19 year olds were participating in education or training, well above the national figure of 92.2% and the highest result for mainland local authorities.

36. In 2017-18, of the 8% of adult learners working towards a numeracy and mathematics goal, all achieved. In 2019-20, this increased to 23% which included partnership work with a secondary school to offer SQA units in the community and ESOL for Parents (numeracy) supported by Maths Champions. During 2020-21 this decreased slightly to 17% due to the impact of the pandemic and this session (2021-22) 15% of adult learners are working towards a numeracy and mathematics goal.

What do experiences in Numeracy and Mathematics look like?

37. Children and young people in East Renfrewshire want to do well in their learning. In almost all classrooms and playrooms they are motivated and engaged in their learning and the relationships between staff and pupils are extremely positive.

38. Reflecting on the previous review of numeracy and mathematics (2012) pedagogy is an improving picture. Up to date research has influenced the professional learning offer, with staff advocating a more investigative, explorative approach to learning, where viewing and using mistakes as a learning opportunity during plenaries etc. as opposed to a heavier reliance on rote learning, formulaic, rapid recall.

39. The numeracy and mathematics skills framework available from early to fourth level provides a consistent curriculum pathway. This enables a strong cluster approach to learning and mitigates from the “fresh start” approach at key transition stages.

40. All establishments were using the revised numeracy and mathematics skills framework to support the planning of learning, teaching and assessment. There is increasing evidence that practitioners are using real-life contexts and links to STEM to provide relevance and make links to the world of work. Staff are committed to improve the curriculum in numeracy and mathematics, building on strengths and tackling key areas for improvement. However schools and staff should take further responsibility for developing numeracy and mathematics across the curriculum.

41. In best practice, learners were provided with high quality experiences that were well planned, promoted curiosity and enquiry and staff used questioning effectively to extend pupils’ thinking and deepen learning. Most learners were confident when providing responses and mistakes were used as an effective teaching strategy. Wait time was used to good effect and concrete materials were evident across all stages to support the development of mathematical concepts.

42. In all secondary school Maths departments, practitioners take part in structured learning visits to gather evidence about learning and teaching which is used to share good practice and plan improvements. In most departments, distributed and distributive leadership is used effectively and this leads to an increase in leadership capacity. In best practice, teacher agency is encouraged and team members feel confident to bring forward evidence based proposals for improvement activity.

43. Digital technology was used effectively in the majority of lessons to enhance learners’ experiences and to capture assessment evidence.

44. There is increasing evidence that staff are making more effective use of assessment data and varied assessment approaches to support continuity and progressions and the identification of appropriate targeted interventions

45. All establishments have ‘moderation facilitators’ who have participated in focused professional learning and are able to lead developments at school, cluster and local authority levels. When surveyed 99% of responses from Moderation Facilitators indicated that they felt equipped to take forward moderation within their establishments and 94% of responses indicated that their confidence in the process of moderation had improved.

What do stakeholders tell us about how they are learning in numeracy and mathematics? To what extent do they find it relevant?

46. The views of learners regarding numeracy and mathematics are very positive. They enjoy learning within a positive environment, taking responsibility for their learning and help

from their teacher when they need it. In questionnaires, most pupils in primary, special and secondary school strongly agreed or agreed that they enjoyed learning in numeracy and mathematics and felt that they were making good progress. With a majority either agreeing or strongly agreeing that they were given choice in what and how they learned

47. Most pupils in the primary and special sector, and a majority in the secondary sector, agreed or strongly agreed that their teacher was helping them to become more confident in their learning of numeracy and mathematics.

48. All Cluster Head Teacher Chairs stated that the quality of learner conversations has improved. Learners have a better understanding of their skills and next steps in learning with most primary and special pupils agreeing or strongly agreeing that they discussed what they learned with others, however only a majority of the secondary pupils indicated that they had this opportunity.

49. Staff across all sectors are very positive about numeracy and mathematics, in particular the high quality support and professional learning they have received. Staff believe this has built not only their capacity to teach this curricular area but also their confidence. Subject specialist staff have worked effectively together on pedagogy and improving experiences and outcomes for all learners.

50. All Maths Champions in early years and primary have used the professional learning opportunities and network meetings to develop their confidence and practices in teaching numeracy and maths. All establishments felt the leadership role of the Maths Champion had made a positive impact through the sharing of key knowledge, training and resources with the wider staff. Staff have cited the range of professional learning as a support during periods of remote learning. There is scope to further develop this network by providing further opportunities to share best practice and look outwards at practice across the authority and the West Partnership.

51. Principal Teachers of Mathematics have established a strong ethos of collaboration across the local authority. The Maths Subject Group is committed to using the programme of collaborative improvement visits as a catalyst to further share best practice in learning and teaching. There is collaborative practice and sharing of expertise within all departments. In all schools, most practitioners actively contributed to self-evaluation activity relating to their collaborative improvement visits.

52. Secondary staff, in focus groups, spoke positively about the benefits of collaboration with colleagues from other East Renfrewshire Maths departments on the Alternative Certification Model last session and expressed a wish to continue with validation and moderation activity through these established networks.

53. When asked, most parents indicated their child enjoyed learning in numeracy and mathematics and are making good progress. The majority of parents feel they receive helpful feedback about their child's progress, with a few stating they have been provided with opportunities to join in with their child's learning. A considerable amount of parents took the opportunity to share their ongoing concerns about home learning and restrictions.

SUMMARY

Key Strengths

54. There is evidence of very strong attainment across all sectors. The performance information clearly shows added value from schools in terms of numeracy and mathematics.

55. East Renfrewshire was the highest performing Local Authority in numeracy at P1, P4, P7 and P1, P4, P7 combined and the senior phase performance in numeracy and mathematics was much better than the national average and our virtual comparator.

56. School leaver destinations remain consistently high and above the national average. The latest participation data (2021) indicated that 97.2% of ERC 16-19 year olds were participating in education or training, well above the national figure of 92.2% and the highest result for mainland local authorities.

57. In almost all classrooms and playrooms children and young people are motivated and engaged in their learning and the relationships between staff and pupils are extremely positive.

58. Pedagogy in numeracy and mathematics is an improving picture. Up to date research has influenced the professional learning offer, with staff advocating a more investigative, explorative approach to learning.

59. The numeracy and mathematics skills framework provides a consistent curriculum pathway. It enables a strong cluster approach to learning and supports consistency at key transition stages.

60. The views of learners regarding numeracy and mathematics are very positive. In questionnaires, most pupils in primary, special and secondary school strongly agreed or agreed that they enjoyed learning in numeracy and mathematics and felt that they were making good progress.

61. Staff across all sectors are very positive about numeracy and mathematics, in particular the high quality support and professional learning they have received.

62. All establishments felt the leadership role of the Maths Champion had made a positive impact through the sharing of key knowledge, training and resources with the wider staff.

Next Steps

63. A refreshed numeracy and mathematics strategy will be agreed. This will take account of areas identified in this report where there is scope for further improvement. The focus of the new strategy is on three main areas: attainment and achievement, learners' experiences and stakeholders. More specifically:

Attainment and achievement

- Leadership of data at all levels – support and challenge all settings to analyse data and identify individuals and groups who require support;
- The use of Pupil Equity Fund – share successful interventions and learning within and beyond the authority and encourage collaboration where appropriate;
- Moderation – Support activity within and across sectors to build assessment capable learners and staff who share a clear understanding of standards and expectations;
- Curriculum pathways – invest in partnerships to explore opportunities and pathways, including working with parents and families.

Learners' experiences

- Professional learning opportunities and Quality Assurance – continue to build the capacity and confidence of all staff to support them to plan and deliver high quality

experiences for all learners with a particular emphasis on challenge, differentiation and feedback;

- Maths Champions – provide further professional learning and leadership opportunities in order to support wider colleagues with support and practical advice relating to numeracy and mathematics;
- Numeracy across learning – support establishments to revisit numeracy as a responsibility for all practitioners. Share practice and provide opportunities for collaboration to support understanding and implementation;
- Digital technologies – continue to build on approaches to the use of digital technologies in numeracy and mathematics to enhance learners' experiences.

Stakeholders

- Adult Learning – continue to work in partnership with Adult Learning Service to ensure parents / carers have the numeracy and maths skills to support their children;
- Parental Engagement – support settings to increase meaningful engagement and involvement in numeracy and mathematics learning;
- Developing the Young Workforce – work in partnership with DYW coordinators to support work with employers to promote a greater understanding of numeracy and mathematics as an essential skill for learning, life and work.

FINANCIAL AND EFFICIENCY IMPLICATIONS

64. Any financial related matters relating to this paper will be met from the department's devolved budget.

CONSULTATION

65. The Collaborative Improvement Model involved close partnership working with a range of colleagues from ADES, Education Scotland and our ELC settings and schools.

66. With partners, this model has enabled East Renfrewshire to very effectively draw conclusions about progress of Numeracy and Mathematics Strategy, setting ambitious next steps that will support our drive for continuous improvement.

67. Colleagues from ADES, Education Scotland and the wider review team have been consulted on the content of this report and agreed the content.

CONCLUSIONS

68. The numeracy and mathematics strategy has made a significant impact on learners' experiences across ELC settings, schools and Adult Learning Services.

69. The impact of Covid-19 on outcomes for children living in poverty is significant and there requires a continued focus on tackling the impact of this in terms of attainment, with careful and considered use of Strategic and Pupil Equity Funding and all other resources.

70. A new Numeracy and Mathematics Strategy 2022 – 2025 should be produced with a key focus on attainment and achievement, learners’ experiences and stakeholders. As part of this strategy the following next steps should be considered:

- There is a need to continue to build the capacity of all staff around leadership of data, quality assurance and assessment and moderation.
- Professional learning opportunities to build the capacity and confidence of staff to plan and deliver high quality experiences for all learners with a particular emphasis on challenge, differentiation and feedback should be made available.
- The role of Maths Champions should be further developed and embedded across all sectors.
- Numeracy across learning should be a priority moving forward.
- The continued success of approaches to digital technologies should be built upon.
- In partnership with Adult Learning Service ensure parents / carers have the numeracy and maths skills to support their children’s learning at home.
- Support and challenge settings to increase meaningful parental engagement and involvement in numeracy and mathematics learning along with creating opportunities to further expand partnerships with employers, trainers and third sectors to explore curriculum pathways and real life learning experiences.

71. Work in partnership with Developing the Young Workforce (DYW) coordinators to support work with employers to promote a greater understanding of numeracy and mathematics as an essential skill for learning, life and work.

RECOMMENDATION

72. Education Committee is asked to note and comment on the progress of the delivery of Numeracy and Mathematics Strategy and the proposed next steps as outlined in this report.

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Appendix 1 – Key Performance Indicators and Targets – Progress to date

Indicator	17-18 value	20-21 Value	Target value
% answers correct in P1 numeracy baseline assessment	59%	61%	60%
% of primary pupils (P1, P4 and P7 combined) achieving expected levels or better in maths	91%	90%	92%
% of S3 pupils achieving 4 th Level in maths	78%	78% (18-19)	80%
% of relevant roll attaining numeracy as SCQF Level 5 or better by end of S6	87%	88%	90%
% of primary pupils (P1, P4 and P7 combined) from SIMD 1&2 achieving expected levels or better in maths	82%	75%	85%
% of S3 pupils from deciles 1&2 achieving 4 th Level in maths	59%	56% (18-19)	65%
Increase the % of adult learners working towards / achieving N&M goals	8%	15%	20%
Increase in the % of pupils presented for a maths qualification at Level 5 or better in S5 and S6	53%	53%	57%

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