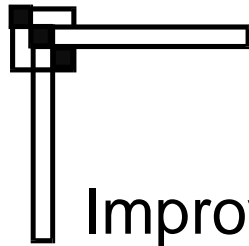
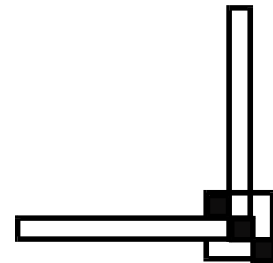




Argyll and Bute Council
Community Services: Education



Improving Mathematics Education 5 - 14



INTRODUCTION

The implementation of the 5-14 National Guidelines in Mathematics has been facilitated within schools in Argyll & Bute by the introduction and development of Programmes of Study such as Argyll Maths. These programmes also contain guidance on national testing and the balance of the curriculum as outlined in Curriculum Paper No. 1.

The recommendations contained in “Improving Mathematics 5-14” provide a useful framework against which to review and refine current practice. This seems appropriate given that established good practice has been evolved throughout the early and mid 90’s. Such a review also emphasises our ongoing commitment to improving levels of attainment and achieving the highest standards for all pupils.

Many schools in Argyll and Bute are addressing the recommendations contained in Improving Mathematics Education 5-14. The following will support schools in responding to guidance contained in Achievement for All : HMI : SOEID : 1996; Achieving Success in S1/S2 : HMI : SOEID : 1997; Setting Targets : A Strategy to Raise Standards : SOEID : 1997; Improving Mathematics Education 5-14.

Aim

The aim of this document is to improve the teaching and learning of mathematics from ages 5-14 and hence raise attainment levels.

Key Issues

The following key issues in improving teaching and learning in mathematics have been identified on the basis of an analysis of 'Improving Mathematics Education 5-14'

Staff Development Needs Related To:

- direct teaching;
- interactive & participative teaching and learning styles;
- teaching and learning practices associated with mental calculations and the setting of homework;
- meeting the challenge of able pupils in mathematics;
- supporting children with SEN in mathematics;
- early intervention strategies in numeracy;
- responsive planning taking account of prior learning;
- best classroom practice in the teaching of mathematics.

Management Issues, Policy and Practice:

- good teaching practice, particularly in relation to homework, mental calculation and teaching styles;
- the appropriate use of calculators;
- the revision of expectations taking into account Pre-5 education and early intervention strategies and adapting the programmes of study accordingly;
- the importance of regular table and number bond practice;
- the time allocation to mathematics.

Planning:

- recommending appropriate resources;
- providing a programme of study for mental calculation;
- using development planning to target the raising of attainment in mathematics;
- using flexibility to increase the time allocated to mathematics within the context of the relevant documents;
- ensuring that national testing is undertaken when a level is completed before proceeding on to a further level;
- identifying aspects of the programme of study which are appropriate to year group/class teaching methodologies;
- identifying within the programme planners areas where regular practice is appropriate eg. number bonds and tables.

- ensuring the Argyll and Bute programme of study guidelines are aligned to take account of the recommended change of pace;
- implementing basic algebra at level D and beyond after national guidelines are issued.

Classroom Organisation:

- setting at P6-7 and S1/S2 within the context of individual school ethos;
- minimising the number of attainment groups and the number of pupils taught as individuals;
- whole class teaching where applicable.

Sharing:

- provide staff with opportunities to visit other establishments, share good practice and work co-operatively across schools and departments;
- provide parents with information relating to Improving Mathematics Education 5-14.

Monitoring:

- systematic monitoring of pupil attainment including national testing;
- ensuring that practice reflects policy;
- monitoring the pupil time spent on mathematical activity.

Cross Curricular Implications:

- inclusion of relevant mathematical tasks in school, departmental policy where appropriate;
- whole school policy on the use of calculators within the stated school policy on mathematics.

Curriculum Continuity:

- Strengthening partnerships across Pre-5, primaries and secondaries in order to ensure accurate transfer of information.

Action Points

The following action points arise from the above key issues and are illustrated in the accompanying Appendix 1.

Management Issues, Policy and Practice relating to all sectors:

- engage in staff awareness raising of the relevant issues;
- review policy and practice on mathematics teaching and learning.

Specific Management Issues relating to the primary sector:

- involve all teaching staff in development planning to identify targets to raise current pupil attainment and overall performance;
- ensure Argyll and Bute planned programme guidelines are aligned to take account of the recommended change of pace, changes should become part of school policy;
- raise awareness of the advantages and disadvantages of setting and recognition that within the majority of Argyll and Bute classrooms setting in groups for mathematics is the norm;

- where setting across classes is an option make this decision within the context of the whole school ethos;
- re-affirm the time allocation for maths in accordance with Curriculum Paper 1 and the agreed school use of flexibility time (Achieving Success in S1/S2 5.7);
- recognise that the Argyll and Bute programme of study incorporates national testing in line with Circular 12/92.

Specific Management Issues Relating to the secondary sector:

- ensure the teaching time for S1/S2 maths classes ranges between 200 and 220 minutes;
- construct secondary timetables to allow the blocking or pairing of S1/S2 classes to facilitate broad banding. This will minimise the number of mathematics teachers each pupil has, ideally each should have one mathematics teacher.
- Provide time and funding to allow dialogue between primary/secondary staff at the time of primary/secondary transfer.

All Teachers of Maths should:

Aim to achieve the following:

- well structured lessons;
- a good pace of work;
- the best possible practice in delivering lessons;
- high standards in all aspects of class work including neatness and accuracy;

- varied teaching strategies to include problem solving;
- pupil independence;
- the consolidation of previous learning;
- adopt an interactive and participative method to engage pupils in active learning;
- lead collective and interactive marking of homework in order to identify any lack of understanding;
- encourage pupil discussion of homework as an integral part of learning and teaching.
- pay greater attention to the process of mental calculation and increase opportunities for:
 - a. discussion of mental calculation methods and how to use efficient approaches;
 - b. analysis of alternative approaches which have been used by pupils;
- times tables and number bonds, appropriate to the stage of classroom teaching, ie stage of planner, to be practised regularly as part of the mental calculation programme;
- use calculators only when directed within the programme of study, national test, or at the teacher's discretion for a well defined purpose, this advice should be stated within each school's policy;
- be aware that national external examinations may be introduced to include tests of numerical calculation without the aid of a calculator.

In Primary Schools Teachers should:

- have high expectations of the performance of their pupils in accord with the following revised expectations:
 - a. schools should aim to achieve Level A as soon as possible and expect more of their pupils to have reached it by the end of P2;
 - b. by the end of P7 most pupils should be working beyond Level D and some should be working well into Level E;
- aim to minimise the number of attainment groups to a maximum of three groups in a one year group class. Teachers must also be realistic about the number of pupils taught as individuals.
- recognise that aspects within programmes of study eg. some aspects of shape and information handling can be introduced and consolidated across attainment groups and across whole class. This is another strategy for maximising teaching time allocation.
- include, as part of the Argyll and Bute Programmes of Study, a direct teaching approach within the variety of methodologies use.
- use group teaching methodologies to allow the more able pupil to meet additional challenges;
- recognise both the use of early intervention strategies and the strengthening of pre-five/school partnerships as important mechanisms to reduce the number of teaching groups and raise attainment.

Maths Departments should:

- move from individualised schemes of work to courses based on direct teaching methods;
- provide courses with achievable but demanding targets for all pupils;
- liaise with primary schools to ensure that accurate information is received for all pupils at the time of their transfer to S1;
- broad band set in S1, where this is realistic, as soon as possible. Ensure that parents and pupils are aware of the criteria for forming classes and the standard pupils must reach to transfer from one class to another.
- liaise with the learning support department to ensure appropriate provision for all pupils;
- ensure courses contain appropriate work on mental calculation;
- review current homework practice and revise department policy statement accordingly;
- revise policy statement on the use of calculator;
- use national testing for the purpose of monitoring pupil progress;
- contribute to the production and sharing of a pool of resources with other departments and other associated schools within the authority to reduce duplication of effort;
- ensure that the development planning process 1998-2000 addresses the issues identified;
- evaluate and review progress in the implementation of the above agenda.

APPENDIX 1

NATIONAL RECOMMENDATIONS (Improving Mathematics Education 5-14)	PRE/SCHOOL - PRIMARY		SECONDARY	
	Management Action Points	Points for Action for Class Teachers	Management Action Points	Points for Action for Maths Teachers
<p>5.4.1 All teachers of mathematics should aim to achieve the following:</p> <ul style="list-style-type: none"> • well structured lessons • best possible practice in delivering lessons • a good pace of work • high standards in all aspects of class work, including neatness and accuracy • varied teaching strategies to include problem solving • pupil independence • the consolidation of previous learning 	<ul style="list-style-type: none"> • Provide staff development for a teacher focused teaching philosophy • provide staff development to include best classroom practice and opportunities to observe good practice and access to quality video materials • ensure good classroom practice as an item in monitoring whole school/department effectiveness 		<ul style="list-style-type: none"> • Provide staff development for a teacher focused teaching philosophy • provide staff development to include best classroom practice and opportunities to observe good practice and access to quality video materials • ensure good classroom practice as an item in monitoring whole school/department effectiveness 	

NATIONAL RECOMMENDATIONS (Improving Mathematics Education 5-14)	PRE/SCHOOL - PRIMARY		SECONDARY	
	Management Action Points	Points for Action for Class Teachers	Management Action Points	Points for Action for Maths Teachers
<ul style="list-style-type: none"> • adopt more interactive and participative methods which engage pupils actively in learning • spend more time in explaining and asking questions or less time in class having pupils engaged in individual practice • ask pupils more often to demonstrate and explain their thinking • make better use of homework as an internal part of learning and teaching with more work corrected by the pupils themselves 	<ul style="list-style-type: none"> • Review school / class homework policy / practice to include consideration of on-going class work once teaching points are secure 		<ul style="list-style-type: none"> • Review school / class homework policy / practice to include consideration of on-going class work once teaching points are secure 	

NATIONAL RECOMMENDATIONS (Improving Mathematics Education 5-14)	PRE/SCHOOL - PRIMARY		SECONDARY	
	Management Action Points	Points for Action for Class Teachers	Management Action Points	Points for Action for Maths Teachers
<p>5.4.2 All teachers of mathematics should:</p> <ul style="list-style-type: none"> follow the advice in 5-14 Guidelines to increase the attention paid to mental calculation by giving pupils regular opportunities to practice skills, discuss methods and be shown how to use efficient approaches (3.9) heed the advice in guidelines that calculators 'should not be allowed to provide unnecessary support or substitute for the development of personal proficiency' (3.10) allow pupils in the 5-14 age range only to use calculators for well defined purposes. In particular, in S1/S2 the widespread practice of letting pupils have unrestricted access to calculators in mathematics classes should be discontinued (3.12) 	<ul style="list-style-type: none"> Provide a programme of study for mental calculation identify and provide resources to support a programme of study for mental calculation include advice on appropriate use of calculators in the school / department policy raise staff awareness of policy changes / reinforcements ensure drilling and practice of tables and number bonds linked to the programme of study becomes whole school policy and is noted on appropriate planner schools and departments should have a policy statement on mental calculation which includes agreed good practice 	<ul style="list-style-type: none"> Provide a programme of study for mental calculation identify and provide resources to support a programme of study for mental calculation include advice on appropriate use of calculators in the school / department policy raise staff awareness of policy changes / reinforcements ensure drilling and practice of tables and number bonds linked to the programme of study becomes whole school policy and is noted on appropriate planner schools and departments should have a policy statement on mental calculation which includes agreed good practice 	<ul style="list-style-type: none"> Provide a programme of study for mental calculation identify and provide resources to support a programme of study for mental calculation include advice on appropriate use of calculators in the school / department policy raise staff awareness of policy changes / reinforcements ensure drilling and practice of tables and number bonds linked to the programme of study becomes whole school policy and is noted on appropriate planner schools and departments should have a policy statement on mental calculation which includes agreed good practice 	<ul style="list-style-type: none"> Provide a programme of study for mental calculation Identify and provide resource to support a programme of study for mental calculation

NATIONAL RECOMMENDATIONS (Improving Mathematics Education 5-14)	PRE/SCHOOL - PRIMARY		SECONDARY	
	Management Action Points	Points for Action for Class Teachers	Management Action Points	Points for Action for Maths Teachers
<p>5.5 Primary school teachers Should:</p> <ul style="list-style-type: none"> aim for more pupils to complete Level A by the end of P2 ensure that by the end of P7, most pupils are working beyond Level D monitor the allocation of pupils to groups, using only as many attainment groups as will allow each group to have regular and effective mathematics lessons employ whole class teaching for introducing and consolidating work use direct teaching to attainment groups where appropriate. Group teaching arrangements should be used to provide more able pupils with additional challenging problems. Early intervention strategies should be employed to support lower attaining groups at the early stages 	<ul style="list-style-type: none"> review class timetables to increase time spent on maths through the use of flexibility time include new benchmark expectations in school mathematics policy review provide staff development in direct teaching and meeting the needs of the able pupil provide staff development for early intervention strengthen partnership between mainstream and pre-five establishments recognise the use of early intervention strategies to raise achievement recognise the importance of strengthening Pre 5/primary school links in ensuring continuity and progression 	<ul style="list-style-type: none"> use group teaching methodologies to challenge the more able pupil staff should have high expectations of the performance of their pupils and should aim to achieve Level A as soon as possible and expect more pupils to have achieved Level A by the end of P2 aim to minimise the number of attainment groups to a maximum of three per class staff should be realistic about the number of pupils taught as individuals recognise that aspects within programmes of study eg shape, information handling can be introduced and consolidated across attainment groups and to a whole class as part of the Argyll & Bute programmes of study include a direct teaching report within the variety of methodologies 		

NATIONAL RECOMMENDATIONS (Improving Mathematics Education 5-14)	PRE/SCHOOL - PRIMARY		SECONDARY	
	Management Action Points	Points for Action for Class Teachers	Management Action Points	Points for Action for Maths Teachers
<p>5.6 In primary schools Headteachers should:</p> <ul style="list-style-type: none"> take into account of pupils' current level of attainment and set realistic but challenging targets for phasing pupils' progress through 5-14 levels ensure that all teachers have clear guidance in the form of a well planned programme structured in line with national 5-14 advice and designed to define clearly the pace at which work should be covered consider the advantages of setting pupils for mathematics in P6 and P7 make arrangements to ensure that the planned time for mathematics is actually delivered to each pupil implement national testing in line with Circular 12/92 	<ul style="list-style-type: none"> involve all teaching staff in development planning which identifies targets to raise attainment monitor systematically the progress of pupils attainment. This should include the monitoring of general test results monitor for agreed good practice 			

NATIONAL RECOMMENDATIONS (Improving Mathematics Education 5-14)	PRE/SCHOOL - PRIMARY		SECONDARY	
	Management Action Points	Points for Action for Class Teachers	Management Action Points	Points for Action for Maths Teachers
<p>5.7 In secondary schools, Mathematics departments should:</p> <ul style="list-style-type: none"> expect that many pupils entering S1 will already be well into work at Level E, and not discourage associated primary schools from letting P7 pupils work at this level (2.5) 			<ul style="list-style-type: none"> staff should ensure that pupils have a good understanding of the content of each level before progressing 	
<ul style="list-style-type: none"> reject a 'fresh start' approach and build on prior attainment (2.5) 			<p>Liaise with primary schools to:</p> <ul style="list-style-type: none"> support transfer of accurate information between primary and secondary schools provide details of the amount of support each child has received in order to attain the level indicated 	

NATIONAL RECOMMENDATIONS (Improving Mathematics Education 5-14)	PRE/SCHOOL - PRIMARY		SECONDARY	
	Management Action Points	Points for Action for Class Teachers	Management Action Points	Points for Action for Maths Teachers
<ul style="list-style-type: none"> follow the advice of <i>Achievement for All</i> and move to broad band setting in S1 for mathematics as soon as feasible. Pupils should be allocated to classes on the basis of good up-to-date assessment information, including the results of national tests and information provided by primary schools (4.6) 			<ul style="list-style-type: none"> Senior Management Team to construct secondary timetables so that S1/S2 classes occur in blocks or pairs time and funding should be provided to allow primary / secondary colleagues and members of the Area Learning Support Team to meet and discuss the progress of pupils at the time of primary / secondary transfer 	

NATIONAL RECOMMENDATIONS (Improving Mathematics Education 5-14)	PRE/SCHOOL - PRIMARY		SECONDARY	
	Management Action Points	Points for Action for Class Teachers	Management Action Points	Points for Action for Maths Teachers
<ul style="list-style-type: none"> reduce the use of individualised schemes and adopt an approach which allows teachers to give more well structured lessons to groups or whole classes (4.8) 			<ul style="list-style-type: none"> provide staff development on interactive and participative teaching methods identify appropriate resources for use with a direct teaching approach provide additional funding to allow the purchase of appropriate resources. (This is necessary as the main resource used in most secondary departments is designed specifically for teaching and learning based on an individualised approach) 	

NATIONAL RECOMMENDATIONS (Improving Mathematics Education 5-14)	PRE/SCHOOL - PRIMARY		SECONDARY	
	Management Action Points	Points for Action for Class Teachers	Management Action Points	Points for Action for Maths Teachers
<ul style="list-style-type: none"> continue to allocate flexibility time to mathematics in S1/S2 so as to increase the time allocated to a level significantly above the current nationally recommended minimum (4.10) 			<ul style="list-style-type: none"> Senior Management should ensure that teaching time for S1/S2 should range between 200 and 220 minutes per week 	
<ul style="list-style-type: none"> Set mathematics homework more regularly for pupils in S1/S2 in order to give them more opportunity for individual practice and consolidation (4.11) 				<ul style="list-style-type: none"> departments should ensure that their homework policy includes statements on the correction of all homework exercises for S1 / S2 pupils
<ul style="list-style-type: none"> implement national testing in line with circular 12/92 (5.3) 				<ul style="list-style-type: none"> departments should ensure procedures are in place for the administration correction and recording of national tests pupils should sit test only when they have completed all the work of the programme of study

NATIONAL RECOMMENDATIONS (Improving Mathematics Education 5-14)	PRE/SCHOOL - PRIMARY		SECONDARY	
	Management Action Points	Points for Action for Class Teachers	Management Action Points	Points for Action for Maths Teachers
<p>5.8 Appropriate bodies at national level (SEED, SQA, SCCC) working as necessary with EAs should:</p> <ul style="list-style-type: none"> • check and adjust minimum national targets for mathematics 5-14 to ensure that they are attainable for most pupils but sufficiently challenging to help raise overall standards • increase the proportion of pupils who attain Level A by the end of P2 • place more emphasis on number particularly at the early stages • introduce algebra at Level D • review the use of the calculator • consider what form of staff development would be most effective in helping teachers adopt a more interactive and participative form of teaching • review courses in teacher education institutions to ensure that the advice being given to students is consistent with this report 	<ul style="list-style-type: none"> • delay action on algebra at Level D until National and authority guidelines are available • internal assessments to be provided for testing numerical calculation without the aid of the calculator • review school policy on the use of calculators 	<ul style="list-style-type: none"> • staff should aim to have more pupils achieving Level A by the end of P2 • use early intervention strategies and resources to improve number work at the early stages • calculators should be used only when directed by the class teacher or when directed within the programme of study 	<ul style="list-style-type: none"> • review department policy on the use of calculators 	<ul style="list-style-type: none"> • S1/S2 pupils should be trained in the appropriate use of calculators

Appendix 2

Direct Teaching

Glossary of Terminology

- Direct teaching is the teacher's active engagement and interaction with pupils about their learning. It involves the teacher spending the maximum time working directly with pupils on individual, group or whole-class activities such as provided clear explanations, questioning, discussing, listening and responding to pupils' views by providing immediate feedback. The most effective direct teaching takes place where pupils have high self-esteem and are confident that their participation is welcomed. Whole class teaching is only one of several kinds of direct teaching and is most effective when account is taken of pupils' prior knowledge.

Setting

- Setting is a form of differentiation where by classes or groups are organised taking account of pupils prior attainment. As long as flexibility remains and support is available to move pupils between classes or groups and all classes or attainment groups are working towards the same outcomes then such groups provide a good basis for direct teaching.

Grouping

- Various types of class groupings are possible. For most purposes in maths teaching grouping based on prior attainment is appropriate. However mixed ability groups could also be an option for consolidation purposes, for example, in maths games activities. Whole class, or year groupings might also be used to introduce or consolidate certain aspects of maths such as information handling.

Appendix 3

Improving Mathematics 5-14

ADVICE TO TEACHERS

Teaching Groups

The most appropriate type of grouping for maths is by prior attainment.

Single year group classes should have a maximum of 3 maths groups.

- Where appropriate an IEP should be devised for individual pupils with identified exceptional needs.
- Two Stage Composite Classes should consider setting across year stages if the pupils are at the same attainment level and should involve liaison with parents.
- It is recommended that there be no more than four groups within a two stage composite class. I.E.P.s as appropriate.

Multi Stage Composites

Within multi stage composite classes it may not be possible given the nature of the class, to achieve the four groups as recommended above. Teachers however, should minimise the number of groups and use a range of resources to provide differentiation.

Pupil Absence

It is in the best interests of all concerned to keep groups together. The following strategies are recommended for consideration on the pupil's return to school:

- Learning support staff could be involved in supporting the pupil to 'catch up'.
- Judicious use of peer group tutoring should also be considered.
- Pages of reinforcement or extension materials could be overtaken at home to allow the child to continue to move at the same pace as the group or class.

Lesson Structures

A typical lesson should follow the following pattern:-

Introduction – mental recall/mental calculation	whole class	10 minutes
Main teaching activity	whole class / groups / pairs	25 – 40 minutes
Plenary session	whole class	10 minutes

Mental Work

Mental recall and calculation has to be taught. A comprehensive programme on mental work will encompass all of the following:-

Mental Recall (drill and speed recall)	Facts that pupils should have immediately available eg multiplication tables, number bonds
Mental Calculation	This involves the use of mental recall for such calculations as $18 + 19$ (double 18-recall-odd 1)
Mental Calculation in Context	The examples to be worked are presented in a written form and the pupil selects the most appropriate mental calculation for the task. The range of strategies selected should be discussed.
Mental Mathematics	Using learned mathematical theory in practical tasks eg a square has 4 equal sides so knowing the size of one side informs the size of all other sides.

Care will be required in the choice and range of resources to ensure coverage of all aspects of mental work.

Mental Planners Levers A-D can be accessed using Argyll on Line.

Main Teaching Activity

Teachers should adopt a direct interactive teaching style. This places more emphasis on, and devotes more time to, engaging pupils actively in learning. Pupils are encouraged to question, discover, listen and respond. Teachers should provide clear practical advice and immediate

feedback. Pupils should be given opportunities to illustrate their ideas to the whole group or class.

Direct teaching involves working directly with pupils as individuals within a group or whole class settings. Direct teaching works best where pupils know that their participation is welcome and valued.

Teachers should identify specific aspects of the main resource for direct / interactive teaching.

Plenary Session

For the purpose of consolidation, teachers could take a whole class approach to sharing and reminding pupils of concepts taught and learned. If homework is to be set it should be allocated at this time.

Managing the Programme

The 5-14 National Guidelines for Mathematics provide a framework which guide expectation. For example – As many children as possible should achieve level A by the end of P2. This should ensure that by the end of P7 more pupils will be working beyond level D, as recommended in ‘Improving Mathematics Education 5-14’.

Teachers should expect management to provide specific guidance on targets relating to levels of attainment at the stage taught.

The following management strategies are recommended:-

- Some aspects of the programme, which do not rely on prior attainment in numeracy can be taught on a whole class / year group basis. These aspects include:-
 - Shape Position Movement
 - Some aspects of practical measurement
 - Information Handling

- Some problem solving
- Mental recall ('simmering' activities)
- As part of planning, and to ensure the maximum amount of time is spent on numeracy, teachers should highlight those aspects intended for whole class / year group teaching.

A revised version of the Argyll and Bute planners are contained in Appendix (3) and will facilitate this exercise.

- Teachers should remember that in guiding pupils through the planners there is no requirement to complete every example on each page or every reinforcement / extension. Highlighting on the planners should reflect the pacing, consolidation and extension requirements of each group.

Homework

Homework can be a tool for managing pace. Mathematics homework should be set on a regular basis. It should be used to provide opportunities for individual practice and consolidation and also to progress pupils through the core material of the programme of study.

Sharing Objectives

Teachers should share objectives with pupils when setting tasks in order to encourage a good pace of learning and motivation. This would also include a degree of expected independence.

Time Allocation

In accordance with recommendations within the documents *Structure and Balance In The Curriculum* and *Achieving Success in S1/S2*, timetable allocation to mathematics should be 3½ hours plus some time from flexibility. This group recommends 5 hours per week.

Class teachers should ensure that all pupils receive the planned time in maths work. It is not appropriate to have pupils working on other subject areas during their specified mathematics time.

Marking and Correction

Pupils should be as actively involved in the marking and correction process as they are in the teaching and learning process. A demonstration of error becomes a teaching point. Reference Page 6 (3.4) of *Improving Mathematics Education 5-14*, “*The aim was to allow mistakes made in homework to reveal difficulties in learning*”.

Use of Calculators

Pupils should only use calculators when indicated within the programme of study. Any exception to this should be based on special educational needs and form part of an IEP.

Availability and Organisation of Resources

A well organised environment will provide stimulus and interest which will motivate and affect the pace at which pupils learn. Points for consideration are:

- designated display areas visible to all pupils;
- angle of blackboard and pupils seating position;
- organisation of resources to ensure ease of access. If deemed necessary each child should have access to individual sets of number bonds and tables prior to the start of each lesson.

Quality of Work

Teachers should set high standards of accuracy, precision and neatness and make correct use of mathematical terminology. Similar standards should also be evident in the quality of teacher prepared materials and visual aids. Pupils should be encouraged to achieve these high standards.

Liaison

Teachers should pass accurate information on each pupil’s attainment level. This should include a note of the most recent completed maths planner.

Teachers of P1 pupils should liaise with pre school workers to ensure continuity and progression from pre school into P1.

All of the above will involve the exchange of written and verbal information to establish realistic starting points of each child. Similar liaison should take place between teachers of P7 pupils and associated secondary colleagues. This liaison process will enable secondary mathematics teachers to prepare appropriate programmes of study and establish suitable groups for S1 pupils.

APPENDIX 4

Schools may wish to review, adapt or adopt this draft policy.

MATHS POLICY

Aims and Objectives

This school endorses the aims and objectives expressed in the *National Guidelines Mathematics 5-14* and recognises the changes in emphasis outlined in *Improving Mathematics Education 5-14*.

Time Allocation

In accordance with the recommendations in *The Structure and Balance of the Curriculum* and in *Achieving Success in S1 and S2* time allocation to mathematics should be 3½ hours plus some time from flexibility. In this school teachers will allocate _____ hours per week to the teaching of mathematics as a discreet subject. There will also be opportunities for children to practise mathematics skills across the curriculum.

Teachers are expected to ensure that all children are given their allocated maths time.

Mathematics homework should be set on a regular basis as agreed in the school handbook and using appropriate resources.

Resources

As in all curricular areas the teacher is the main resource. The programme of study is based on the document *National Guidelines Mathematics 5-14* and detailed in the following revised *Argyll and Bute Planners* etc. The main resource for the teaching of this programme is *Heinemann Mathematics*.

Classroom Organisation and Methodology

There is a range of approaches to the teaching of mathematics. There should be a focus on direct teaching and interactive learning. Such teaching and learning can be undertaken on an individual, pair, group or class basis as appropriate.

Maths lessons will be structured to include mental work, main teaching activity and plenary session.

Teachers must remember that pupils should use calculators only when indicated in the programme of study. Teachers are expected to minimise the number of groups and pupil's with an IEP to be taught. In this school there should be no more than ____ main teaching groups in each class unless by arrangement with the head teacher. The groupings will normally be based on prior attainment in numeracy.

Teachers will use whole class / year group teaching for selected aspects of the mathematics programme as agreed and contained in the *Advice to Teachers* (appendix 1).

Differentiation

Teachers will use a range of strategies to ensure an appropriate curriculum for every child.

These strategies may include:-

- the style and pace of teaching and learning
- judicious use of resources
- homework
- extension and reinforcement activities
- the amount of teacher support
- accepting an appropriate range of responses and outcomes.

Pace of Teaching and Learning

Teachers will follow the guidance on attainment as provided by national guidelines and modified by management in consultation with staff. This guidance will reflect agreed target setting levels for this school.

In following the schools programme of study teachers should remember there is no requirement for each child to complete every example in the various resource used.

Mathematics homework should be set on a regular basis as agreed ie using the resource

Assessment

Planning

Using the planners, teachers forward plans will highlight and detail the progression of teaching and learning planned for each group. These plans will be submitted to the head teacher as agreed.

Assessing

There will be continuous diagnostic assessment using a variety of approaches:-

- informal ongoing assessment using jotters and worksheets
- formal assessment as indicated in the programme of study to determine progress in, and completion of levels of attainment.
- Summative and confirmatory assessment using National Testing

Recording

Teachers will record childrens progress on the appropriate pro-forma on a regular basis.

Recording should take place as and when a child completes a level, changes class or leaves the school.

Reporting

Feedback from the assessment process will be discussed with the children on an ongoing basis. There will be a report on the progress and success of each pupil based on a variety of evidence collated by the teacher. This evidence will form the basis of the pupil report to parents and will focus on next steps for development.

Marking and Correction

All maths work should be marked as soon as possible after completion. This will normally be on a daily basis. Certain aspects of maths work may be marked and corrected by pupils themselves; for example mental maths and homework with the supervision of the class teacher.

Liaison

To ensure continuity, progression and a uniformity of assessment, teachers should liaise with current stage colleagues throughout the session (both on an informal and formal basis): previous stage colleagues at the beginning of the year: and the receiving teacher at the end of the session. Exchange of written and verbal information should establish realistic starting points for each child. Further liaison is necessary when pupils move on a stage in primary and beyond into secondary.

This policy will be reviewed in 2007/08