

MODULE 2

Timetabling

Rationale

Designing an appropriate timetable for a multigrade situation can be a challenging task.

For the multigrade teacher, however, a well-planned timetable is crucial for the efficient use of instructional time, materials and resources. It also sets the tone for, and reflects the educational philosophy of, the school.

Without a timetable, there would be chaos and many of the values inherent in education would be lost; values that relate to times of work; types of skills; attitudes; resources; national and societal goals; and culture.

Objectives

Teachers should be able to:

- (1) list reasons for timetabling;
- (2) identify factors to be considered in designing a timetable, and briefly state how they affect the design;
- (3) discuss different approaches to designing a timetable;
- (4) explain the differences between timetables based on the weekly format, and the day format;
- (5) design a timetable for a given situation and be able to justify the choice.

Need for timetabling

A timetable is the means by which resources - teachers, teaching areas, finance and time - are marshalled to provide the greatest possible educational opportunities and alternatives for pupils, in the most cost-effective manner. In the developing world, the emphasis on cost-effectiveness cannot be overstated. The more effectively resources are utilised, the better the education for the greater number of children. Decisions expressed by the timetable affect the entire school population and reflect the educational programme and philosophy of the school.

In the multigrade situation, as well as the single-grade one, the timetable is essential for several reasons:

- (i) it helps teachers, as well as students, to 'pace' themselves;
- (ii) it enables teachers to plan lessons so that the syllabus stipulated by the ministry, or the school itself, is completed in the available time; and
- (iii) it enables students to prepare themselves mentally for what happens next, as the routine or pattern makes them comfortable and also facilitates learning.

A well-designed timetable provides opportunities for meeting students' needs, by taking account of their age, attention span, abilities, interests and ambitions. Other important factors that must be considered are class size and teachers' skills and competencies.

The timetable is also needed for the teacher, especially in the multigrade situation, in order to manage resources, space and time effectively.

The timetable must also accommodate the ministry's directives on contact time, subjects to be taught and their allocation.

In essence, a timetable should be pupil-centred to maximise learning opportunities.

Factors to consider

In order to prepare an appropriate timetable, the following should be considered:

- (1) the total amount of contact time available;
- (2) the subjects to be incorporated and the weight to be given to each subject (as stipulated by ministry policies and directives);
- (3) the kind of flexibility that should be incorporated in the timetable;
- (4) the arrangement of subjects, given students' preparedness and levels of concentration, at different times of the day;
- (5) the available resources, for example, space and facilities, and also which subjects can be taught simultaneously;
- (6) the topics that may be infused;
- (7) teacher competence and skill, for example, in the subjects of music, physical education, reading, science, as well as teacher availability; and

(8) attitudes of students, teachers and community.

Teachers may have other considerations but the above will help in designing an appropriate timetable. Preparing a timetable may be time-consuming, but it is worth investing the time to develop an appropriate one.

Teachers can appreciate the importance of the timetable but must also recognise that there are times when it is necessary to deviate from it. If, however, this is happening too often, then it may be necessary to modify the timetable to better reflect the changes that are being made.

Contact time

The amount of teaching time the teacher spends with his/her class is called 'contact time'. The school day is usually broken down into periods. The length of a period varies from school to school. However, there are few periods that are less than twenty minutes long or more than forty-five minutes long. The decision on length of period is made by the ministries or individual schools.

Time spent with pupils is maximised through careful planning beforehand. Alexander et al. (1992) suggest that there should be a more equitable distribution of non-contact time and that individual schools need to monitor their non-contact time within the ministry guidelines.

Teachers are expected to use time for quality instruction and for helping students develop skills through individual teaching, group teaching or whole class teaching. Most teachers would, at some point of the day, have employed the use of all three methods.

Subjects taught

The subjects to be taught, and the weight given to each subject, is usually stipulated by the ministry. Generally, the subjects include reading, English language or language arts, mathematics, science, social studies, music, physical education, and in some cases religious education.

Often, more weight is given to reading, language arts and mathematics. For instance, the teacher may be required to teach ten periods of mathematics per week and three periods of science.

Some educational researchers warn against doubling periods (for some grades and classes) as this may result in less learning taking place:

The 40 minute period fits well with recent research, that the attention span of the average secondary student begins to decline after

30/40 minutes. Double periods of 80 minutes reduce the amount of work for timetables, but their durability must be carefully considered, taking into account the amount of project and practical work in a subject. (*Better Schools*, Module 4, p 10.)

This is especially true for the primary student who has an even shorter attention span. Teachers therefore, in designing the timetable, should take these factors into consideration, and plan so that the aims and objectives of their daily instruction will be achieved.

Flexibility

Timetables are not engraved in stone and should never be treated that way. They should be used as guides for subject divisions and arrangements that enable teachers to cover the curriculum for each grade in the most effective way.

Teachers should have flexible arrangements and opt for choices that will enable them to spend an adequate amount of contact time with each of the grades or groups.

One way to do this is to put topics that require a lot of teacher time together with subjects that require less. For example, one class may work at a topic in mathematics while the other works at language arts from a textbook.

The textbook work will require less teacher time in that after the initial introduction and explanation, the children can work on their own while the others are taught a new concept or skill in mathematics.

Another way is to put the same subjects together, but teach a different content. The degree of flexibility that can be incorporated into teaching will vary in accordance with the way the timetable has been prepared.

According to the findings of the UNESCO publication *Synthesis of Case Studies on Single Teacher Schools and Multigrade Schools* (1996, p 18), flexible timetables for pupils demands the following:

- careful work preparation;
- good management of activities and presence in the class;
- a management of activities which avoids periods of inactivity and lack of time to complete tasks;
- the arrangement of class space: permanent and temporary space, furniture, aisles; and
- the provision of reading materials so that pupils can work alone.

Flexible timetabling is especially important in the 'thematic approach'. This methodology involves organising the school day around a theme/topic, for example, 'communication' or 'animals'. This approach is very useful because it can be infused into any timetable and has the potential to cover all or almost all of the subjects without making any major changes.

It is very useful for project work. The activities developed through a theme can often be carried out using materials from the environment.

A timetable which offers maximum flexibility often reflects a combination of subject groupings. It makes allowance for easy manipulation and adaptation while taking into account the type of subject, curriculum weighting, time of day and other relevant factors. It also gives the teacher scope to make maximum use of time, space and other resources, in a way which will produce the best and most desired learning outcomes.

Arrangements of subjects

Students' levels of preparedness, degree of alertness and interest level vary throughout the day.

Some teachers observe that students are at their best early in the morning, and thus 'core' subjects like mathematics, language arts and reading are timetabled for these times, and more practical or activity-oriented subjects are timetabled in the afternoons, for example, art and craft, physical education, science.

However, in timetabling teachers should note that all subjects incorporate both mental and physical activity.

Another consideration in looking at subject arrangements in the timetable is to sequence subjects of differing demands. For example, physical education - requiring much physical activity, followed by reading - requiring quiet individual seat work, followed by science - requiring group investigations, followed by singing - requiring whole class participation.

Table 1: subject and student activities

Period	Subject	Student Activity
1	P.E.	Individual physical activity in open spaces
2	Reading	Individual quiet seat work
3	Science	Group investigations in assigned spaces
4	Singing	Whole class in assigned spaces
5	Social Science	Individual quiet seat work

Time schedule

In many developing countries time specifications for school hours is decided by the Ministry of Education or the local authority on education. Such reduction or increasing of school hours needs special approval. The total number of school hours per week remains the same for a school in a multigrade situation as for an age-grouped primary school. There is need for flexible scheduling of time for each subject per day, provided that officially allocated time for each subject per week remains unchanged. In this way teachers can determine how much time is needed for a specific class organisation.

Time allocation for different learning activities may vary according to need. For each learning activity, time has to be allocated for commencement, monitoring, reinforcement, evaluation and recording. Use of time vis-à-vis curriculum content and learning outcomes needs to be examined. Development of a number of time-filling games and learning activities with specific outcomes in view will minimise idling time and provide opportunities for the teacher to attend individually to the pupils with special needs (slow learners, gifted children). Time could be blocked out in unequal blocks to suit the overall plan. More teacher contact time for the lower primary should be planned for the morning hours. There should be time spent with the whole school, shared time between teachers and pupils (individuals and groups), and between pupils in one grade or across grades.

Source: UNESCO (1996). Inter-regional workshop on single-teacher schools and multigrade classes. Final report. Box 2

Note that many educators consider the ideal start to the teaching day is with a class assembly, so that the students can feel a sense of unity.

Approaches to designing a timetable

A number of different approaches may be used by the multigrade teacher to design a class timetable. Two of these are the subject staggering approach and the common subject approach.

(a) *Subject staggering*

In a multigrade school, the teacher will have to teach at least two or more year grades. Sometimes, the teacher will have to teach all the children in the school, especially if it is a one-teacher school in a remote area.

In such cases, it may then be necessary to arrange the timetable so that each grade is taught a different subject at a specified time. That is, from 9:00 a.m. to 9:30 a.m., if three grades are involved, one grade will do mathematics, another grade science, and the third grade language arts. This kind of arrangement is called subject staggering. This arrangement allows the teacher to work with one grade, while the others work on their own, from the prescribed text or from worksheets. This timetable is illustrated in the following example:

Time	Grade 4	Grade 5	Grade 6
9:00-9:30	Mathematics	Science	Language Arts
9:30-10:00	Mathematics	Art and Craft	Reading
10:00-10:30	Language Arts	Art and Craft	Science

In any case, the teacher will either have prepared worksheets or games, identified pages, or placed material within access of the grade groups who are to use them. These activities must have clear and simple instructions which the students can follow independently.

The teacher groups the students and may introduce measurement in mathematics to Grade 4 and pre-made reading comprehension cards to Grade 5, while Grade 6 do a research activity in social studies to Grade 6.

If it is a one-teacher school, the preparation for the remaining classes would be: Grade 3, paired reading; Grade 1, colouring shapes in mathematics; Grade 2, artwork. In this way, the teacher will have successfully staggered five subjects: mathematics, reading, social studies, art and craft, and language arts.

(b) *Common Subjects*

In some multigrade schools the timetable will show that all the grades taught by one teacher are doing the same subject at the same time, but each grade will be working at a different topic. This is what is called common subject arrangement. For example, the grades may be assigned the following activities in maths.

<i>Example 1:</i>	Grade 1	Fractions	} Maths
	Grade 2	Odd and even numbers	
	Grade 3	Measurement	

This arrangement allows the teacher to work with one group while the others work alone, or spend time with each group while they all work from workbooks or work cards.

Also in the common subject arrangement all children may be working on the same topic but at different levels.

<i>Example 2:</i>	Grade 1	Colouring half of a number of objects
	Grade 2	Addition of fractions with like terms
	Grade 3	Problems - John had 54 marbles. He gave away $\frac{1}{6}$ of them. How many did he give away

An example of this type of timetable is given below:

Period	Monday			Tuesday		
	Grade 1	Grade 2	Grade 3	Grade 1	Grade 2	Grade 3
1	Maths	Maths	Maths	P.E	P.E.	P.E.
2	Reading	Reading	Reading	Soc. Studies	Soc. Studies	Soc. Studies
3	Science	Science	Science	Reading	Reading	Reading
		Break			Break	
4	Music	Music	Music	Lang. Arts	Lang. Arts	Lang. Arts

In some cases all the children can work from text or worksheets while the teachers act as facilitator. Most often teachers use this time to teach new ideas or a particular skill to one of the grades. For example, the teacher may introduce a new concept in maths to Grade 2 while Grades 1 and 3 work from the text book.

The common subject approach might also involve *subject grouping* discussed below.

(c) *Subject Grouping*

In this approach 'whole class' teaching is done and is most effective if the year groups are close. A single subject is taught to all the children. Art and craft, physical education, music and creative writing can be taught in this way.

This method can place tremendous stress on the teacher if the year groups are too large. The multigrade teacher has to be creative in order to manage the whole class effectively.

The main advantages of this approach are:

- (i) the teacher will be teaching/facilitating a single subject instead of two or more;
- (ii) the students can also be involved in peer teaching; and
- (iii) the social interaction will be greater in a 'whole class'.

Available resources

The availability of resources such as space, facilities, resource personnel and community input, can impact negatively or positively on the timetable, and in fact can determine its design.

Teachers therefore need to be aware of the resources available, which must also include suitable local substitutes, in designing an appropriate timetable for their situation, be it multigrade or otherwise.

Infusion

Infusion is the teaching of the elements of one subject through another subject.

When planning the timetable, it is necessary for the multigrade teacher to consider which subject areas can be infused.

Infusion is discussed in greater detail in the module on curriculum.

Teacher competence, skill and availability

Single-class teachers generally do not receive training. The training for teachers in single teacher schools is usually the same as for normal schools.

Many multigrade teachers also have no formal teacher-training, and colleges prepare trainees primarily for the monograde teaching situation. Hence, the multigrade teacher might not feel competent in all of the subject areas demanded by the school timetable. In schools where help and supervision are not available, the multigrade teacher might be tempted to devote most of the teaching time to his or her preferred subjects, and neglect other needed/required subject areas. This practice disadvantages the students.

In many multigrade situations, only one (or two) teachers deal with all the students. It sometimes may be physically impossible for all the required subject areas to be taught as stipulated by the ministry. In these situations, the teacher must employ such approaches as subject staggering, common subject and infusion. This mix will allow a coverage of the curriculum and reduce the heavy physical and mental demands on the teacher.

Attitudes

Teacher attitude is especially critical in multigrade situation. The authors of *Better Schools* (Module 4, p 13) note that negative attitudes "can militate against the innovative use of resources which would add to the school's efficiency such as how the school hall is used and the time of registration and

assembly." In the multigrade situation, particularly where the school is small, teachers need to ensure careful management of time and use of resources, especially those which have to be shared so that learning is not severely interrupted.

Some teachers resist change and insist that certain subjects must be taught at specific times during the day. For example, mathematics, language arts and reading must be done during the morning session while science, social studies and art are timetabled for the afternoon session. In multigrade situations this rigidity is not practical.

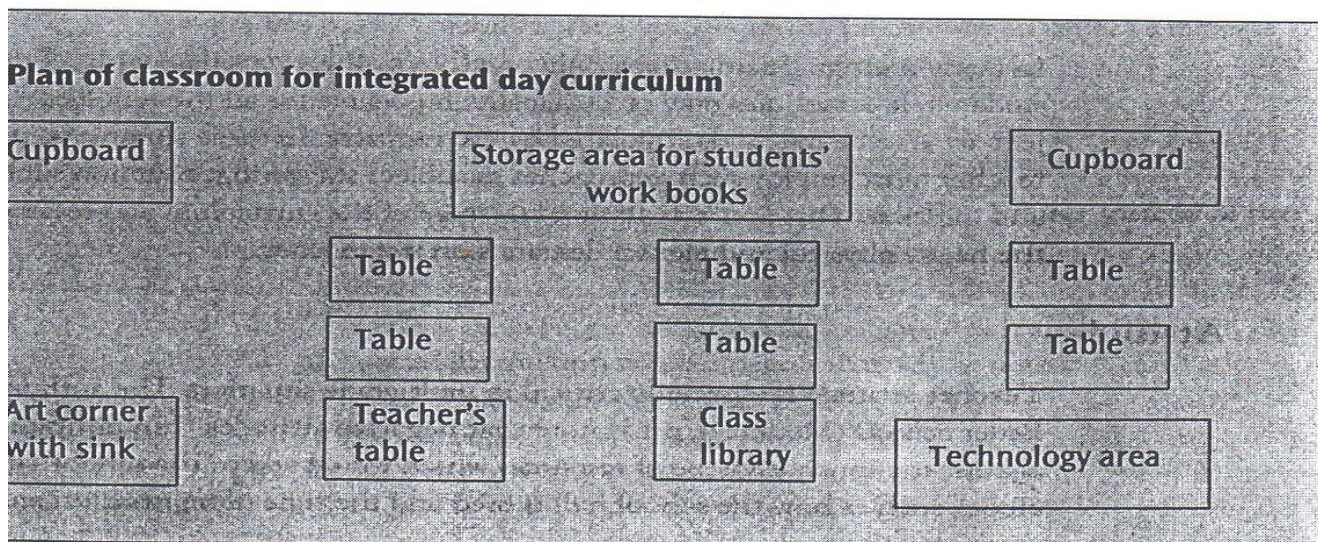
Environmental factors must also be considered in timetabling subjects.

Planners of timetables for Caribbean multigrade schools need to bear in mind when allocating subjects that certain school days may be significantly affected by local circumstances. This suggests the need for further flexibility in timetabling arrangements.

The integrated day

The integrated day as a teaching approach is also useful in multigrade situations. Taylor (1972, p 51) explains that the integrated day is "essentially, a form of organisation in which the child exercises a greater degree of choice about what he is going to do and when he is going to do it." She stresses, however, that it is the teacher's responsibility to ensure that learning takes place in whatever activity the child chooses.

When using this approach there is "the abandonment of formal timetables and the substitution of an informal change as and when groups or individuals complete the work they have in hand" (Badcock, et al., 1972, p 65). The teacher has to monitor activities to ensure that at the end of the day or the end of the week each student has participated in all the set activities.



In an integrated day approach there could be set times for radio broadcasts and for using resources (such as those for physical education). There are also times when the students will gather as a whole class for such activities as planning some visit or for receiving general instructions from the class teacher.

Boydell (1987) points out that, although a variety of teaching methods may be used in an integrated day, individual work is most popular.

The integrated day approach has been found to have both advantages and disadvantages.

Advantages

- (1) It enables students to assume responsibility for their own learning.
- (2) It is mainly tailored to meet individual needs.
- (3) Students have freedom to select the order in which they want to do activities.
- (4) It helps the teacher to easily identify the students' interest, rate of work and concentration span.

Disadvantages

- (1) If not properly organised it can result in low achievement on the part of the students.
- (2) It can be very exhausting for the teacher and much time can be wasted if the student spends too much time (more than is necessary) on one activity.

One approach that fits in well with the integrated day is the thematic approach.

Thematic Approach

This has more to do with lesson planning than timetabling. This is explained in more detail in the module on scheduling.

Types of timetable

Different timetable arrangements can be used in multigrade schools. Here we will only discuss two types: the weekly timetable and the day timetable.

The weekly timetable

This is the most common type of timetable and the example shown on page 23 is typical.

Note that within this timetable are examples of the subject staggering, common subject and other teaching approaches discussed earlier in the module.

The day timetable

In this case, the day timetable is not 'tied' to a particular day of the week and can give greater flexibility, in some cases, than the weekly timetable.

For example, whenever a day is missed, say, for a national holiday, sports or national disasters, then the day following is treated as the next day of the timetable.

One benefit of this arrangement is that activities regularly occurring on a particular day (for example, staff meetings) do not result in particular subjects always losing contact time.

The school timetable gives information on teaching staff and class distribution, and subjects taught, and at what times of the day.

The timetable should serve the needs of all categories, intellects and aptitudes of the students.

The type(s) of timetable chosen should be the most appropriate in reflecting the ethos and philosophy of the school, and should be prepared with consultations, so that all relevant data are collected and utilised.

References

1. 'Module 4 (Managing the Curriculum and Resources)', *Better Schools, Resource Materials for School Heads*, Commonwealth Secretariat Publications (1993).
2. Alexander, Robin, Rose Jim and Woodhead, Chris, (1992), *Curriculum Organisation and Classroom Practice in Primary Schools: A Discussion Paper*, London: Department of Education and Science (DES).
3. *Synthesis of Case Studies on Single-Teacher Schools and Multigrade Schools*, UNESCO Publications, 1996.
4. Taylor, Joy, (1972), *Organising and Integrating the Infant Day*, London: George Allen and Unwin Ltd.
5. Badcock, E H, Daniels, D B, Islid, J, Razzell, A G, and Ross, A M (1972), *Education in the Middle Years*, Sussex: Richard Clay (The Chaucer Press Ltd.).
6. Dean, Joan (1997), *Managing the Primary School*, London: Mackaus of Chathan Ltd.
7. Boydell, Deanne (1997), *The Primary Teacher in Action*, Somerset: Open Books Publishing Ltd.

Appendix: Sample multigrade timetables

1. Weekly version

Period	Monday			Tuesday			Wednesday DEVOTIONS (ASSEMBLY AND PRAYERS)			Thursday			Friday		
	Grade 1	Grade 2	Grade 3	Grade 1	Grade 2	Grade 3	Grade 1	Grade 2	Grade 3	Grade 1	Grade 2	Grade 3	Grade 1	Grade 2	Grade 3
8:00 am	Maths	Lang. arts	Reading	News Lang. arts	Reading	Maths	Rhymes	Reading	Maths	Social studies	News	Maths	G.A.	G.A.	G.A.
8:15 am	Maths	Lang. arts	Reading	Writing	Compre- hension Maths	Maths	Writing	Reading	Maths	Maths	Comp. writing	Maths	Reading	Reading	Reading
8:55 am	Maths	Lang. arts	Reading	Reading	Maths	Maths	Maths	Reading	Maths	Maths	Comp. writing	Maths	Reading	Reading	Reading
9:35 am	Reading	Maths	Poetry	Reading	Maths	Comp. writing	Maths	Poetry	Grammar	Maths	Comp. writing	Reading	Reading	Maths	Maths
10:15 am	BREAK														
10:30 am	Vocab- ulary Maths	Maths	Science	Social studies	Science	Reading	Picture comp.	Social studies	Reading	Lang. arts	Maths	Lang. arts	Rhymes	Compre- hension Reading	Compre- hension Reading
11:10 am	Maths	Lang. arts	Reading	Writing	Compre- hension	Maths	Writing	Reading	Maths	Maths	Comp. writing	Maths	Reading	Reading	Reading
11:50 am	LUNCH														
12:20 pm	Science	Art/craft	Maths	Maths	Grammar	Social studies	P.E.	P.E.	P.E.	P.E.	P.E.	P.E.	S.T.	S.T.	S.T.
1:00 pm	Science	Art/craft	Maths	Maths	Grammar	Social studies	Story telling	Story telling	Story telling	Rhymes	Comp. writing	Art/craft	O.G.	O.G.	O.G.
1:40 pm	Music		Story telling	Story telling	Story telling										
2:20 pm	DISMISSAL														

Lang. Arts - Language arts
 Comp. Writing - Composition writing
 O.G. - Organised games
 P.E. - Physical education
 Picture comp. - Picture composition

2. Five-day format

Period	Day 1			Day 2			Day 3			Day 4			Day 5		
	Grade 1	Grade 2	Grade 3	Grade 1	Grade 2	Grade 3	Grade 1	Grade 2	Grade 3	Grade 1	Grade 2	Grade 3	Grade 1	Grade 2	Grade 3
8:00 am															
8:15 am	Maths	Lang. arts	Reading	Reading	News Lang. arts	Maths	Rhymes	Reading	Maths	Social studies	News	Maths	G.A.	G.A.	G.A.
8:55 am	Maths	Lang. arts	Reading	Compre-hension	Writing	Maths	Writing	Reading	Maths	Maths	Comp. writing	Maths	Reading	Reading	Reading
9:35 am	Reading	Maths	Poetry	Maths	Reading	Comp. writing	Maths	Poetry	Grammar	Maths	Comp. writing	Reading	Reading	Maths	Maths
10:15 am															
10:30 am	Vocab-ulary	Maths	Science	Science	Social studies	Reading	Picture comp.	Social studies	Reading	Lang. arts	Maths	Lang. arts	Rhymes	Compre-hension	Reading
11:10 am	Maths	Lang. arts	Reading	Compre-hension	Writing	Maths	Writing	Reading	Maths	Maths	Comp. writing	Maths	Reading	Reading	Reading
11:50 am															
12:20 pm	Science	Art/craft	Maths	Grammar	Art/craft	Social studies	P.E.	P.E.	Social studies	Reading	P.E.	LUNCH	P.E.	P.E.	P.E.
1:00 pm	Science	Art/craft	Maths	Grammar	Art/craft	Social studies	Story telling	Story telling	Story telling	Story telling	Story telling	Story telling	Rhymes	Comp. writing	Art/craft
1:40 pm	Music		Story telling	Story telling	Story telling										
2:20 pm															

Lang. Arts - Language arts
 Comp. Writing - Composition writing
 O.G. - Organised games
 P.E. - Physical education
 Picture comp.: Picture composition

3. Split timetable for Grades 4 and 5, single teacher

Period	Monday	Tuesday	Wednesday	Thursday	Friday
9:00 - 9:10 am			ASSEMBLY		
9:10 - 9:50 am	5 Reading 4 Comprehension	General science Mathematics	Composition	Reading Comprehension	Mathematics Composition
9:50 - 10:30 am	5 Vocabulary 4 Reading	Grammar Social studies	General science Handwriting	Social studies Reading	Vocabulary General science
10:30 - 10:45 am			BREAK		
10:45 - 11:25 am	5 Mathematics 4 Handwriting	Social studies Grammar	Reading Mathematics	Grammar	General science Mathematics
11:25 - 12:00 pm	5 Reading (free) 4 Mathematics	Mathematics General science	Grammar	Mathematics Social studies	Composition Social studies
12:00 - 1:35 pm			LUNCH		
1:35 - 2:10 pm	5 General science 4 Reading	D.E.A.R.	Mathematics Reading	Reading Mathematics	Social studies Vocabulary
2:10 - 2:50 pm	5 Handwriting 4 General science	Poetry	Handwriting General science	Physical	Art and craft
2:50 - 3:30 pm	5 Family life 4	Music	AgriScience	Education	Art and craft

Students in Grades 4 and 5 sometimes work in the same subject.

4. Timetable for Grades 3 and 4, single teacher

Period	Monday	Tuesday	Wednesday	Thursday	Friday
9:10 - 9:50 am	Language arts	Social studies	Language arts	Social studies	Family life education
9:50 - 10:30 am	Mathematics	Language arts	Mathematics	Language arts	Mathematics
10:30 - 10:45 am			BREAK		
10:45 - 11:25 am	Science	Language arts	Language arts	Language arts	Language arts
11:25 - 12:00 pm	Mathematics	Mathematics	Science	Mathematics	Science
12:00 - 1:30 pm			LUNCH		
1:30 - 2:10 pm	Mathematics	Science	Social studies	Science	Mathematics
2:10 - 2:50 pm	Social studies	Art and craft	Language arts	Music	Language arts
2:50 - 3:30 pm	Language arts	Art and craft	Physical education	Language arts	Social studies

Both classes work on the same subjects at the same time.

Source: Teacher Education Modules for Multi-grade Teaching

Publisher: Common Wealth Secretariat