



TIMETABLE INPUTS

Notes and Activities for the Beginner Timetabler: Part 2

Resource Series: Effective Timetable Planning in Schools: User Manual

This resource should be used together with:

- [General Concepts : Notes and Activities for the Beginner Timetabler: Part 1](#)
- [Developing the Timetable : Notes and Activities for the Beginner Timetabler: Part 3](#)

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Now adapted for the Thutong Education Portal by DEVED Trust.

CONTENTS

Topic	Page
1. Introduction	3
2. Intended Outcomes	4
3. Five Key Elements: Facts Required for Basic Timetabling	5
4. Teaching Load Distribution	7
5. Subject requirements	12
6. Resources	16
6.1 Human Resources	
6.2 Physical Resources	
7. Calculations	19
8. Conclusion	22

1. INTRODUCTION

WELCOME BACK!

Our belief is that Part 1 aroused your curiosity just enough for you to want to see where this Timetabling process leads. We particularly hope that more educators have now seen that timetabling is not the domain or hallowed ground of only a few select members of staff.

It's the intention of this series to take all interested educators through the process of timetabling so that they'll feel confident enough to offer their services to the Timetabling Committee at their schools.

Part 2 starts with the nitty-gritty of timetabling: the educators, their workloads and the subject requirements.

Please follow us as we take you a step further.

2. INTENDED OUTCOMES

By the end of this section you should be able:

- To know the questions to ask to gather key information for the timetable
- To understand the process of arriving at a fair teaching load distribution
- To be more informed on the policy regarding subject requirements
- To implement the process of allocating/distributing workloads
- To implement the procedures of calculating so that correct key information can be gathered for timetable inputs

3. FIVE KEY ELEMENTS

In Part 1 we discussed the "Time" and the "Resources" of timetabling. Now we bring them together to arrive at the five key elements vital to the constructing of the school timetable:

- **Numbers**
- **Time**
- **Space**
- **Professional educators**
- **Competent planners**

These five key elements give us the facts that are required for basic timetabling.

ACTIVITY 1

Below is the scenario of an example school. Read the scenario then list, in the columns provided below, words or references made in the example school to each key element:

EXAMPLE SCHOOL:

There is a senior primary school with three grades represented (grades 5 to 7).

The school has 7 x Grade 5 classes, 7 x Grade 6 classes and 7 x Grade 7 classes.

When timetable planning for the next year started on 5 November, there were 983 learners registered at the school.

The school utilises a 5-day cycle of 10 periods per day

It is assumed that 140 grade 5 learners will replace the 140 grade 7s leaving the school to go to high school. (Theoretically, if it is in the best interests of any learner to repeat, it is assumed that the same number will repeat in each grade. So, the overall numbers do not change; that is, what you lose at the top, you gain at the bottom!)

There are 25 staff members filling the 25 available posts.

Five of the staff members form the school management team (SMT): the principal, the deputy principal, and 3 HODs. The principal teaches 10 periods per cycle, the deputy principal teaches 25 periods and the HODs teach 35 periods each.

The provincial educator to learner ratio is 1: 40.

The school has 21 classrooms.

NUMBERS	TIME	SPACE	PROFESSIONAL EDUCATORS	COMPETENT PLANNERS
LEARNERS	PERIODS			STAFF

4. TEACHING LOAD DISTRIBUTION

There's nothing more demotivating for an educator than to be the victim of an unfair workload distribution. But the bottom line is that in such instances the actual victims are the learners. In our contact with schools, one of the chief complaints from some educators is that at some schools principals claim heavy loads of administrative tasks thus excluding themselves from actual teaching duties, which creates heavier workloads for educators. Education policy ratios for teaching posts include the principal and unless the school has SGB appointed posts which contribute to lighter workloads, the exclusion of the principal will affect the fair distribution of workloads.

Education Policy on educator workloads is stated clearly in The Employment of Educator's Act 76 of (1998).

The time allocated for teaching in respect of different post levels will differ according to the size of the school. In smaller schools, the Principal and Deputies are required to do more teaching than in large schools with bigger staff compliments. The actual hours must therefore be established in relation to the curriculum establishment of the schools.

The allocation of scheduled teaching time should be done in such a manner that it:

- maximizes that individual abilities of all educators and
- optimizes teaching and learning at the institution level

In general terms, the following extract from Education Law & Policy should be considered in determining the scheduled teaching time.

Allocation of teaching time in primary schools

Post level 1	:	Between 85% and 92%
Post level 2	:	Between 85%and 90%
Deputy Principal	:	60%
Principal	:	Between 10% and 92% depending on which post level appointed to

NB. Principals at post level 1 are expected to teach 100% of the scheduled teaching time.

Allocation of teaching time in secondary schools

Post level 1	:	Between 85% and 90%
Post level 2	:	85%
Deputy Principal	:	60%
Principal	:	Between 5% and 60% depending on which post level appointed to

In Part 1 we discussed co-operative planning which facilitates fair workloads. To illustrate our process of how fair educator teaching loads are arrived at we'll again use the scenario of our Example School in this activity.

ACTIVITY 2

EXAMPLE SCHOOL:

There is a senior primary school with three grades represented (grades 5 to 7).

The school has 7 x Grade 5 classes, 7 x Grade 6 classes and 7 x Grade 7 classes.

When timetable planning for the next year started on 5 November, there were 983 learners registered at the school.

The school utilises a 5-day cycle of ten 30 minute periods per day

It is assumed that 140 grade 5 learners will replace the 140 grade 7s leaving the school to go to high school. (Theoretically, if it is in the best interests of any learner to repeat, it is assumed that the same number will repeat in each grade. So, the overall numbers do not change; that is, what you lose at the top, you gain at the bottom!)

There are 25 staff members filling the 25 available posts.

Five of the staff members form the school management team (SMT): the principal, the deputy principal, and 3 HODs. The principal teaches 10 periods per cycle, the deputy principal teaches 25 periods and the HODs teach 35 periods each.

The provincial educator to learner ratio is 1: 40.

The school has 21 classrooms.

We're going to use the information in our example school to answer the following sets of questions asked in Table 1 below, for timetabling planning purposes:

TABLE 1

	QUESTIONS	EXAMPLES
1-1	How many learners are registered at the school on the day timetable planning starts?	_____ learners
1-2	What is the Department of Education allowance for teaching posts at the school?	A ratio of ___: ___ (___ learners to ___ post). So, ___ ÷ ___ = ___+, which could be rounded off to ___ available posts .
1-3.1	Which staff are going to be allocated 'appropriate/policy' administration and management time?	The p _____ The d _____ The 3 _____
1-3.2	How many periods do the management staff (principal, deputy principal, and HODs) teach? (This has policy implications)	<ul style="list-style-type: none"> • the principal teaches _____ periods • the deputy principal teaches _____ periods • together the 3 HODs teach _____ periods
1-3.3	Total up all these periods	Together the 5 management posts amount to _____ periods.
1-4	How many staff will occupy ' full teaching posts '? In other words how many educators will be left after SMT have been given their periods to distribute the balance of the periods amongst	We have _____ posts Less the _____ management posts Equals _____ full time posts
1-5	What number of teaching spaces (usually classrooms) is readily available? This is a question with many possible answers. The vision and ethos of the school will help one decide on the most <i>educationally sound</i> number. Try various options if you are able to. It is not a matter of right or wrong. The question is <i>what is the best under your particular circumstances?</i>	_____ classrooms If it is a large building you may have spare classrooms to turn into specialist rooms such as a laboratory, a library, a computer room, a music room, an arts and crafts room, and/or a world of work (i.e. career guidance) room.
1-6	Which is the most suitable number of periods and the period length in minutes of each period, in a five-day learning block, the traditional weekly timetable?	Number of periods per day _____ Number of days per cycle _____ Number of periods per week _____ Length of periods _____ minutes

In Table 2 below we illustrate our calculations for timetabling planning purposes

ACTIVITY 3

Please read Table 2 below. Look at our answers. Look at the codes we've used to do our calculations. In the column headed 'Your School' do the exercise of working out the calculations for the school you're teaching at.

CALCULATIONS FOR TIMETABLING PLANNING PURPOSES

(Refer to Table 1 for the questions to ask to get the required 'facts'.)

TABLE 2

	FACTS REQUIRED	EXAMPLE	YOUR SCHOOL	CHANGES
2-1	Number of (L) Learners	$L = 983$		
2-2	Approved number of (Po) Posts	$Po = 25$		
2-3	(M) Management staff periods	$M = 140$		
2-4	(F) Full-slot educators	$F = 20$		
2-5	Number of (C) Classes	$C = 21$		
2-6	Number of (Pe) Periods in cycle	$Pe = 50$		
WHAT YOU NEED TO CALCULATE				
2-7	Total number of teaching periods needed: Classes (C) x Periods (Pe) = (T)	$21 \times 50 =$ 1 050	$C \times Pe = T$	$C \times Pe = T$
2-8	Full-slot educator periods required: Total periods (T) - Management periods (M) = (Y)	$1\ 050 - 140$ = 910	$T - M = Y$	$T - M = Y$
2-9	Teaching load per (full-slot) educator: Full-slot teaching periods (Y) ÷ Full-slot teachers (F) = (Z)	$910 \div 20 =$ <u>45.5</u>	$Y \div F = \underline{\underline{Z}}$	$Y \div F = \underline{\underline{Z}}$
VITAL INFORMATION YOU NOW HAVE FOR TIMETABLE PLANNING: Apart from the management teaching load (refer to Table 1), the full-slot teaching staff will have a teaching load of 45 periods or 46 periods out of a possible 50 periods.				

In Table 3 below you're given a summary of the teaching load for all posts in our Example School. Complete the summary column for your school.

TABLE 3: SUMMARY

	PERIODS			
	OUR EXAMPLE	YOUR SCHOOL	ANY CHANGES	FURTHER CHANGES
Management Staff (5)				
• Principal	10			
• Deputy principal	25			
• HOD 1	35			
• HOD 2	35			
• HOD 3	35			
Full-time teaching staff (20)				
• Each member	45 or 46			
<p>When you have achieved this step, you have ensured a fair teaching load distribution. It is now possible to start finalising negotiations about exactly what subjects / learning areas each educator will be allocated. This is where educator flexibility is so important, particularly with regard to the misnamed 'non-examination' subjects.</p>				

NB Our example school is based on department educator: learner ratio. All posts including SGB posts, temporary posts etc MUST be included in the calculation totals.

5. SUBJECT REQUIREMENTS

The ultimate purpose of any timetable is to meet the needs of the learners; to facilitate the implementation of a balanced and holistic curriculum. The National Education Policy Act 27 of (1996) ensures this. The following extract from the Revised New Curriculum Statement indicates National Education Policy in relation to time allocations as percentages of time for the different Learning Areas in the Intermediate and Senior phases:

LEARNING AREA/ PROGRAMME	TIME (%)
LANGUAGES	25%
MATHEMATICS	18%
NATURAL SCIENCES	13%
SOCIAL SCIENCES	12%
TECHNOLOGY	8%
ECONOMIC AND MANAGEMENT SCIENCES	8%
LIFE ORIENTATION	8%
ARTS AND CULTURE	8%
TOTAL	100%

This distribution of time allocations per Learning Area translates into one of the key elements of timetabling talked about earlier: Time. You can now be confident that you're

planning your timetable within the confines of policy. These percentages of time, which total 100%, can be converted into periods per Learning Area.

REMEMBER:

- periods fill the day
- days fill the cycle
- cycle meets the formal teaching time allocations

WHICH CYCLE SHOULD YOUR SCHOOL USE?

Each school has its internal dynamics and the cycle chosen by the school should be part of the consultative process discussed in Part 1. Rather the questions to ask should be

- Which cycle will meet the needs of my school?
- Which cycle will ensure a balanced and holistic curriculum?

When this decision has been reached then the conversion from percentages of time to periods can begin.

We'd like, however, to point out the advantages of cycles longer than the five-day cycle. The seven-day cycle timetable, for example, has the following advantages:

- It allows for more double periods; longer periods allow for more intense coverage of Learning Area/Subject content. Noise when changing periods is reduced
- It allows the educator to cover or complete more sections of work
- It is more flexible in the sense that days alternate from Monday to Friday i.e. Day One can be any day from Monday to Friday
- It allows more free periods giving educators more time to plan, prepare and mark

- Tests can be given every seventh day (one per cycle)
- If one day in the week proves to be a bad day for attendance then the subjects that fall in that day are not always the same

The following table illustrates the workload of educators in terms of periods (10 periods per day)

PRIMARY SCHOOL

5-day cycle timetable

7-day cycle timetable

(Total = 50 periods)

(Total = 70 periods)

Post Level 1 : between 85% and 92%	43 - 46	60 - 65
Post level 2 : Between 85%and 90%	43 - 45	60 - 63
Deputy Principal : 60%	30	42
Principal : Between 10% and 92% depending on which post level	5 - 46	7 - 65

SECONDARY SCHOOL

5-day timetable

7-day timetable

(Total = 50 periods)

(Total = 70 periods)

Post Level 1 : between 85% and 92%	43 - 45	60 - 63
Post level 2 : Between 85%	43	60
Deputy Principal : 60%	30	42
Principal : Between 5% and 60% depending on which post level	3 - 30	4 - 42

The following table illustrates *an example* of the percentage allocation per Learning Area to be used - based on a 5 day and a 7 day cycle timetable of 10 periods per day

Outcomes Based Education		5 DAY	7 DAY
Learning Areas		Periods	Periods
1. Languages	25%	13	17
2. Mathematics	18%	9	12
3. Natural Sciences	13%	6	9
4. Social Sciences	12%	6	8
5. Technology	8%	4	6
6. Economic & Management Sciences	8%	4	6
7. Life Orientation	8%	4	6
8. Arts & Culture	8%	4	6
TOTAL PERIODS	100%	50	70

6. RESOURCES: EFFECTIVE UTILISATION OF RESOURCES

6.1 HUMAN RESOURCES

Schedule 1 of the Employment of Educators Act, No 76 of 1998 has determined the Integrated Quality Management System (IQMS) of which the purpose is to evaluate individual educators and to recommend processes for professional development. Educators should not only be moved by the outcome of the quality management appraisal before looking to develop themselves further, but should rather be proactive in their own personal and professional growth.

Proactive educators

- Articulate all the *real needs* (not personal *wants*)
- Reach consensus on the order of priorities
- Evaluate with integrity their own performance and the performance of learners under their care

The Timetabling process also requires that educator teaching range, fields of subject knowledge and expertise should be considered and best used to benefit learners.

Educator fields of knowledge and expertise can be recorded for timetabling purposes.

The following is an example of a form that can be designed by the school to record this information

EDUCATOR	SUBJECT SPECIALISATION	FORMAL TRAINING YEARS	TEACHING YEARS
Ms A Smith	English	4	6
	History	4	6
	Typing	2	12
Mr G Nkosi	Accounting	3	18
	Mathematics	3	10

It's true for most educators that the fewer the number of subject topics for which they need to prepare daily, the more thorough the preparation will be. There's hope if an educator only has to prepare for two or three subjects: if there are four or more subjects it's likely that the standard of preparation will drop or won't be done.

If the same prepared lesson is taught over and over, it's often the case that the third or fourth presentation of the lesson is 'the best'. Educators learn to improve from repeated presentation of a prepared lesson.

It usually helps educators professionally to limit the range of teaching preparations. For this to become a reality we need to know the minimum number of educators required to teach a subject. Educators usually have to teach across several grades.

It is preferable to be a Subject/Learning Area authority across many (several) grades than to be a 'Subject/Learning Area specialist' in a particular grade

6.2 PHYSICAL RESOURCES & LSM

By facilities is meant the space or building required for any meaningful teaching to take place. By resources is meant the support material that could help in the teaching and learning process such as books, charts, science equipment, chalk, chalkboards etc.

There are serious circumstances in many schools in South Africa. The following extract from an article written by Penny Sukhraj and published in the Sunday Times, 4 July 2004, page 10 which illustrates the serious circumstances still prevailing in some schools in South Africa. The principal of the school was quoted as saying:

"We have no electricity, water or toilets. The children use the nearby bushes and the spring for water is 2km away."

Other physical resources lacking at the school are mentioned:

"Her class sits huddled on the earth-dung floor ...

There are only 25 desks for six classrooms. Two classes share each room with their backs to each other as they face their respective teachers, who take turns using the single blackboard."

**ALL THESE FACTORS HAVE TIME AND SPACE MANAGEMENT IMPLICATIONS
AND AFFECT THE TIMETABLING PROCESS**

7. CALCULATIONS

Calculations for timetables are as numerous as the timetables constructed from them. We'd like to share with you the processes we use when doing calculations.

Our timetabling calculations will be done practically where you'll use a mix of forms which will take you through the process. Please read the forms carefully. Each section in the different forms requires that you complete the information asked for.

We advise you to use pencil and paper and have a calculator on hand.

FORM 1

1.1 Calculation of number of periods per cycle per class

		GET	FET
How many days are there in your cycle: (e.g. 5 days)	A		
How many periods in each school day : (e.g. 10 periods)	B		
TOTAL number of periods per cycle per class totals (A x B) (e.g. 50 periods)	C		

1.2 What grades does your school have?

From Grade: e.g. Grade 1		To Grade: e.g. Grade 7	
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1.3 Calculate your Provincial Educator to Learner Ratio
 (e.g. 1 educator to 35 learners in FET Phase ; 1 educator to 40 learners in GET Phase, etc)

		GET	FET
How many pupils in your school? e.g. 722 learners	D		
Provincials ratio e.g. 35	E		
Your School is entitled to this number of educators e.g. 20 (D ÷ E)	F		
How many educators (in total) are there in your school? E.g. 17	G		
This is how many you still require/or have too many (F - G) e.g you have 3 too few educators (These would be Provincial ratios only. SGB posts would not be included)	H		

1.4 How many classes are there in every grade:

Enter each grade and add up each row						
GRADE	CLASS e.g. 8A	CLASS e.g. 8B	CLASS e.g. 8C	CLASS	CLASS	Total of each row e.g. 3
GET						
1						
2						
3						
4						
5						
6						
7						
8						
9						
Total number of GET Classes					I	
FET						
10						
11						
12						
Total number of FET Classes					J	
TOTAL NUMBER OF GET AND FET CLASSES IN THE SCHOOL (I+J) = K						

1.5 Calculate the number of periods requiring supervision that are held in one cycle for the Intermediate and Senior Phases.

		GET	FET
Total number of classes e.g. 20	(Refer K above) K		
Number of days in your cycle e.g. 5	(Refer A above) A		
Number of periods per day e.g. 10	(Refer B above) B		
Total number of periods for entire Phase (K x A x B) e.g. 20 x 5 x 10 = 1000	L		
Total number of periods in your cycle for entire school (Add line L (above) GET and FET totals together)		M	

All the above sections have supplied us with information that determines:

- Time (periods, days)
- Numbers (grades, classes, learners, educators)
- Educators (department ratio)
- Space (no of classes needing rooms)
- Competent Planning (which can now take place)

**FIVE
KEY
ELEMENTS**

The planning process now includes the Learning Areas/Subjects, grades, classes and periods that have to be distributed among the educators to create a basic timetable for your school.

This we do in Part Three

8. CONCLUSION

We have taken you through a very detailed process of:

- Gathering key information necessary for the constructing of the timetable
- Made use of activities to guide you through the process of arriving at a fair workload distribution for your educators
- Following National Policy when distributing workloads and converting percentage allocations for Learning Areas into periods
- Discussing how accountability from educators, wise use of educator experience and knowledge and the lack of physical resources can affect the timetable
- How early calculations inform the five key elements of timetabling