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Information and Communications Technology Expenditure within Basic Education between 2017/18 and 2019/20

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GOVERNMENT SPENDING REVIEWS

Summary

Information Communications Technology (ICT) is an essential learning and teaching aid in Basic Education. To equip them the skills they need for the 4th Industrial Revolution, learners must have access to hardware, software, and internet connectivity. Currently within the Basic Education sector, it is difficult to determine the amount of funding allocated for ICT and what is purchased with public money. This spending review examines how much provincial governments spend on ICT. The analysis uses Basic Accounting System (BAS) data to categorise expenditure into five groups: hardware, software, connectivity, ICT consumables and training and systems support.

The spending review reveals that there are large variations across provinces, driven mainly by different approaches to providing and using ICT in education. For instance, whereas the Eastern Cape spending focuses on expanding connectivity in schools. the Western Cape is creating a smart school system with considerable expenditure incurred on hardware.

The institutional and logical framework analysis reveals that the National Department and Provincial Education Departments have different approaches to buying ICT. At present, there are no norms and standards that govern how much ICT should be given to learners and teachers. Whereas the Department of Basic Education procures online platforms and funds some ICT through the Maths Science and Technology (MST) grant, provincial departments also use their equitable share to buy ICT.

Aside from the differences in provincial strategies, interviews with departmental officials also revealed that procurement processes differ across provinces. There is currently no transversal contract in place for education ICT. That said, the National Department is currently working with National Treasury and the State Information Technology Agency (SITA) to develop the specification for an ICT transversal contract. Nevertheless, it appears that provinces are not participating in any transversal contacts. They usually develop specifications of ICT they require and go through SITA for the procurement. This effectively means that provinces might not be getting the best value for money from the R2 billion they spent in 2019/20 on ICT.

Despite the higher spending on ICT in some provinces, the overall expenditure on ICT remains low, accounting for a mere 0.7% of the total education budget. In per capita terms, this translates into an average of R144 per learner. However, the average expenditure masks considerable differences across provinces, with the Eastern Cape spending more than double the national average on ICT.

While it would have been ideal to understand what Provincial Education Departments (PEDs) are getting for their ICT spending, we do not have enough information on prices and quantities to evaluate the value for money of this expenditure. This is potentially an area for further research in the next series of spending reviews.

Nevertheless, in light of the large differences in spending across provinces, a critical policy question remains. What will the implications of these large disparities in ICT spending on educational outcomes over the long-term? Another important question is: are we getting value for money for what we spend on ICT?

Executive Summary

ICT is seen as a tool to help improve teaching and learning. For Basic Education to prepare its students for the 4th industrial revolution, it must invest in ICT for teaching and learning.

At present, we are unable to determine how much is being spent in ICT within the Basic Education sector and what devices are purchased. This spending review will focus on how much was spent by the nine PEDs over a period of three years (2017/18 to 2019/20) and to understand what was purchased.

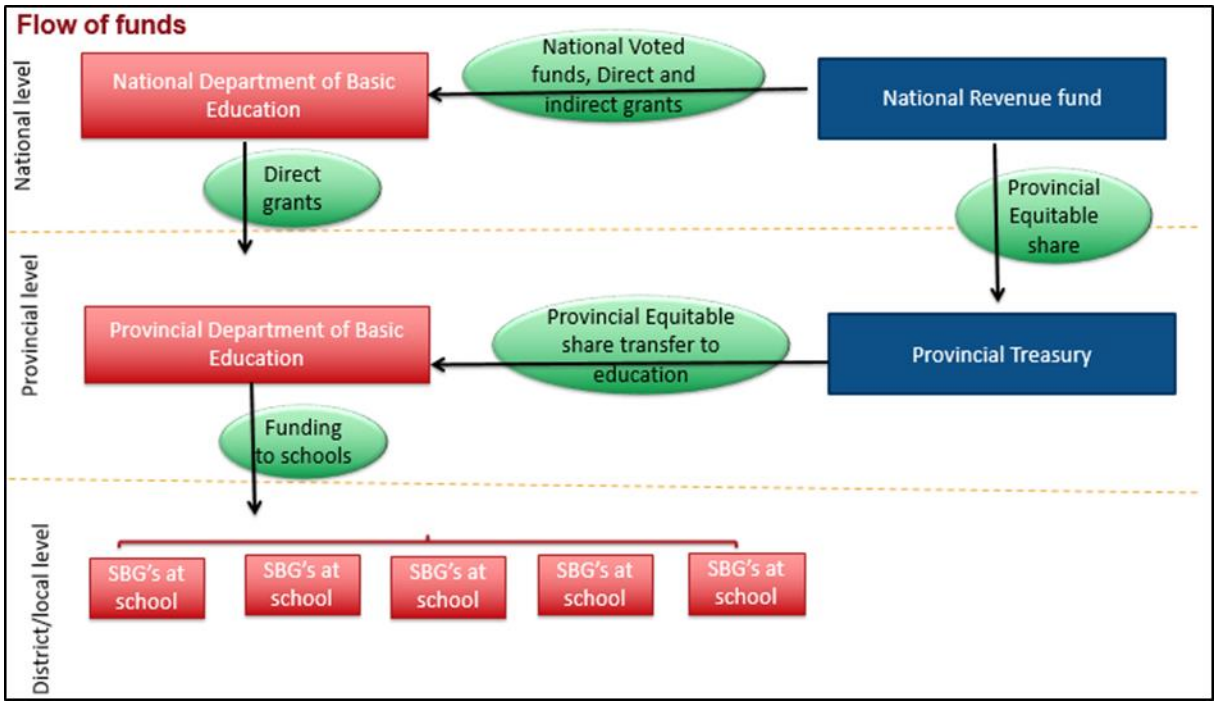
Basic Education is a concurrent function delivered by both Provincial and the National Department of Basic Education. Given this, there are various stakeholders involved in the provision and monitoring and evaluation of ICT. They fall within different levels of Government (national, provincial and district level).

The most important laws and policies governing the basic education sector include: National Education Policy Act (Act No. 27 of 1996), South African Schools Act (Act No.84 of 1996), National Norms and Standards for School Funding (NNSSF, as amended in 2006), Employment of Educators Act (Act No. 76 of 1998) and the Education Laws Amendment Act (Act No. 24 of 2005). In terms of policy documents that relate to ICT, there is the White Paper on e-Education (2004) and Operation Phakisa (2015). The White Paper on e-education is dated, and the use of technology in basic education has changed since 2004. Effectively, this means that the policy framework may need to be updated. In contrast, Operation Phakisa was meant to be an implementation plan to give direction to National and Provincial departments. However, the plan produced by Operation Phakisa was seen as unaffordable, and it is unclear whether provinces are consistently implementing the plan.

To conduct the expenditure analysis, data was sourced from BAS. As ICT expenditure does not fall under a specific programme or subprogramme with the provincial budget structure, expenditure data had to be mapped using the lowest item and asset levels from Standard Chart of Accounts (SCOA). It was then categorised in five expenditure buckets (connectivity, hardware, ICT consumable, software and training and systems support) to determine what provinces have purchased.

Funds are currently allocated to ICT within the Basic Education Sector flow through two funding streams. The MST grant, which accounts for approximately 2.5 percent of total ICT (R5.3 billion over the three-year period) and Provincial Equitable Share (PES) that accounts for the remaining 97.5 percent of expenditure. These funds flow from the national level to provincial level and then to schools at the district level. Figure 1 outlines the funding flow.

Figure 1 Funding flow in Basic Education

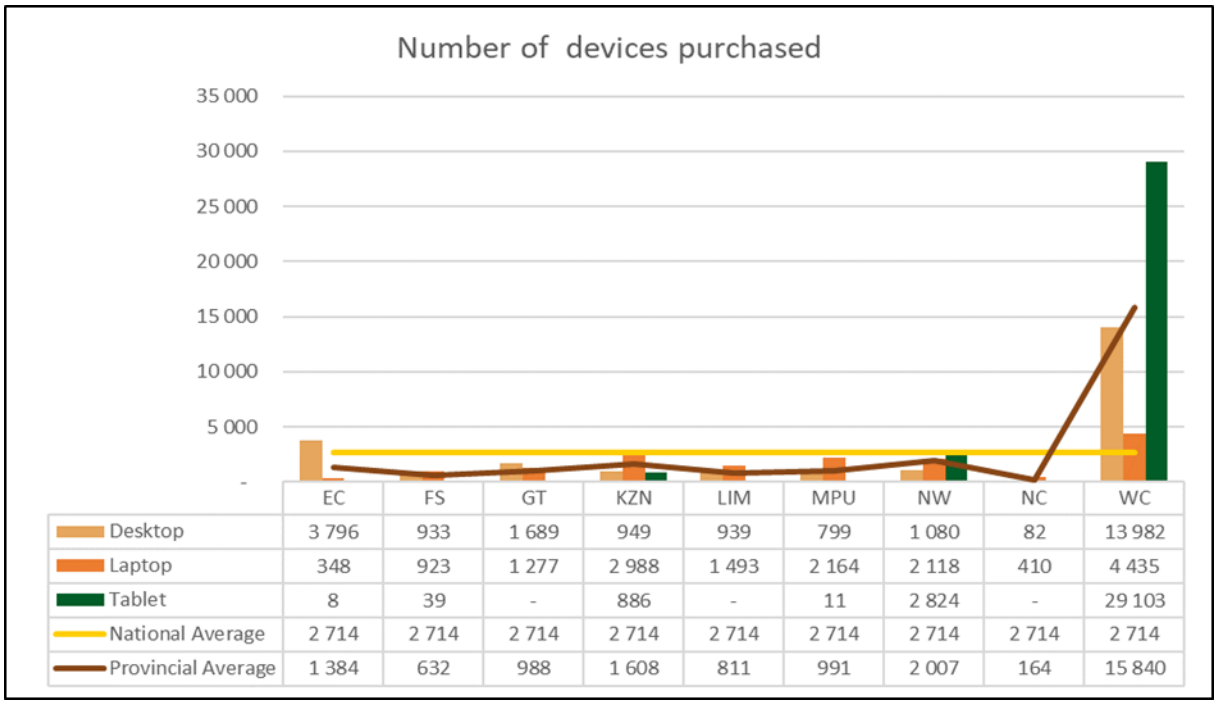


We utilised both the national and nine provincial departments annual reports and annual performance plans to determine what was purchased. However, we could not find any specific performance indicator that related to ICT. It is for this reason that we had to find alternate ways to determine some performance information.

The MST grant had a few indicators which each province had to report on a quarterly basis, based on the outputs of the grant framework. This framework is reviewed each year by various stakeholders at the national and provincial level.

To determine performance information for PES, we used the Operational Phakisa costing for ICT devices (desktops, laptops and tablets), adjusted it by inflation to get prices for the 2017/18 to 2019/20 financial years. This allowed us to determine the number of devices that was purchased by each province. A total of 73 275 devices (see figure 2 below) was purchased over a three-year period, with Western Cape being the province that invested the most (15 840 devices). All other provinces are well below the national average, 2 714 devices, over the same period.

Figure 2 Estimated number of ICT devices purchased across provinces

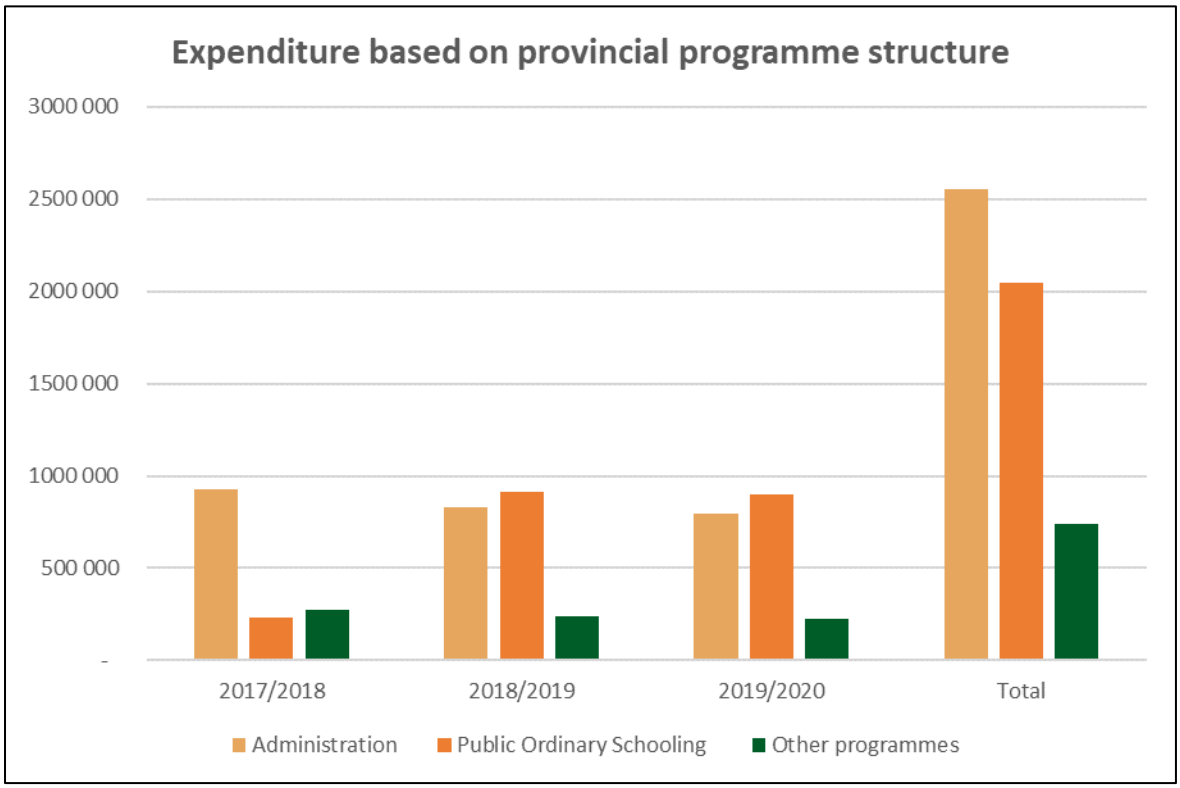


	EC	FS	GT	KZN	LIM	MPU	NW	NC	WC
Desktop	3 796	933	1 689	949	939	799	1 080	82	13 982
Laptop	348	923	1 277	2 988	1 493	2 164	2 118	410	4 435
Tablet	8	39	-	886	-	11	2 824	-	29 103
National Average	2 714	2 714	2 714	2 714	2 714	2 714	2 714	2 714	2 714
Provincial Average	1 384	632	988	1 608	811	991	2 007	164	15 840

Provincial Education Departments have a standardised budget structure that includes seven budget programmes. To make sense of the data, we have grouped expenditure by budget programmes (see figure 3) as follows: (1) Administration, (2) Public Ordinary Schooling and (3) Other programmes (including the remaining five programmes).

The Administration programme accounts for the highest portion of total ICT spending. It equates to R2.5 billion or 47.8 percent of the total. This finding is surprising as all expenditure in this programme is meant for administrative purposes. However, we have found that ICT expenditure under the Administration programme was incurred for both administration and teaching and learning purposes. For example, Western Cape incurs majority of their ICT expenditure under the Administration programme for hardware in support of their Smart School programme. The next highest ranked budget programme is Public Ordinary Schooling at R2 million or 38 percent of total ICT spending (Figure 3).

Figure 3 ICT expenditure by provincial programme



Expenditure based on the five categories of ICT expenditure is reflected in Figure 4 ICT expenditure by category. It shows that different provinces have their own strategies and are prioritising different categories of ICT. For example, Western Cape prioritises hardware, Eastern Cape on connectivity and Limpopo on ICT consumables.

Figure 4 ICT expenditure by category

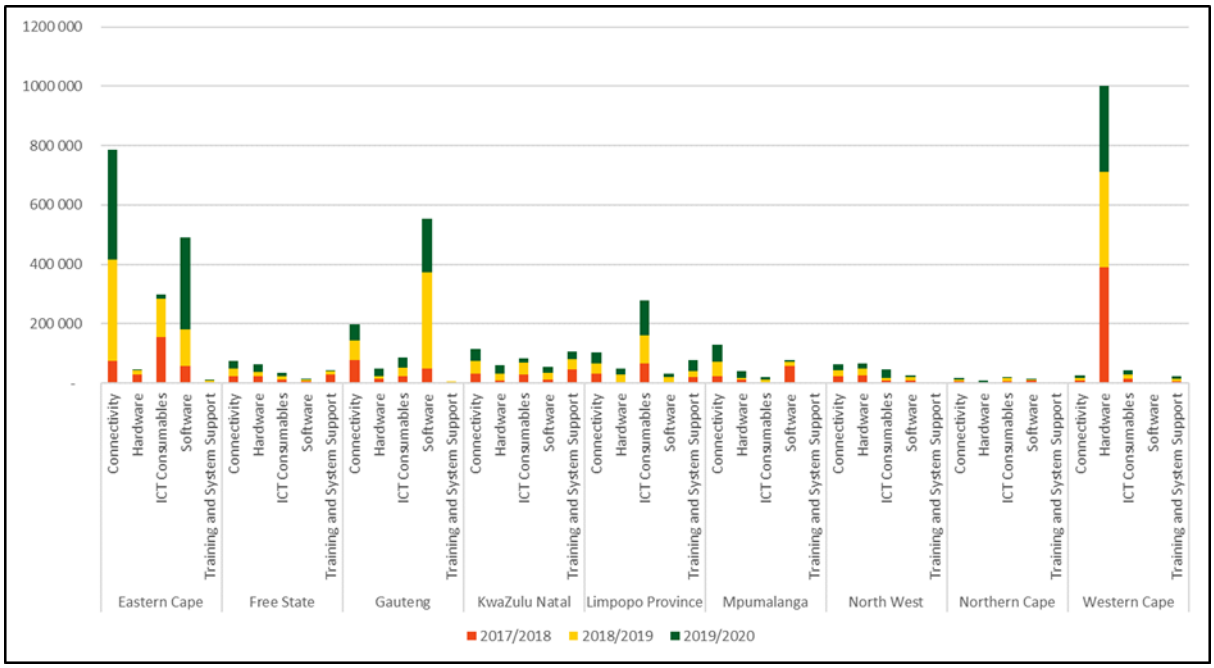
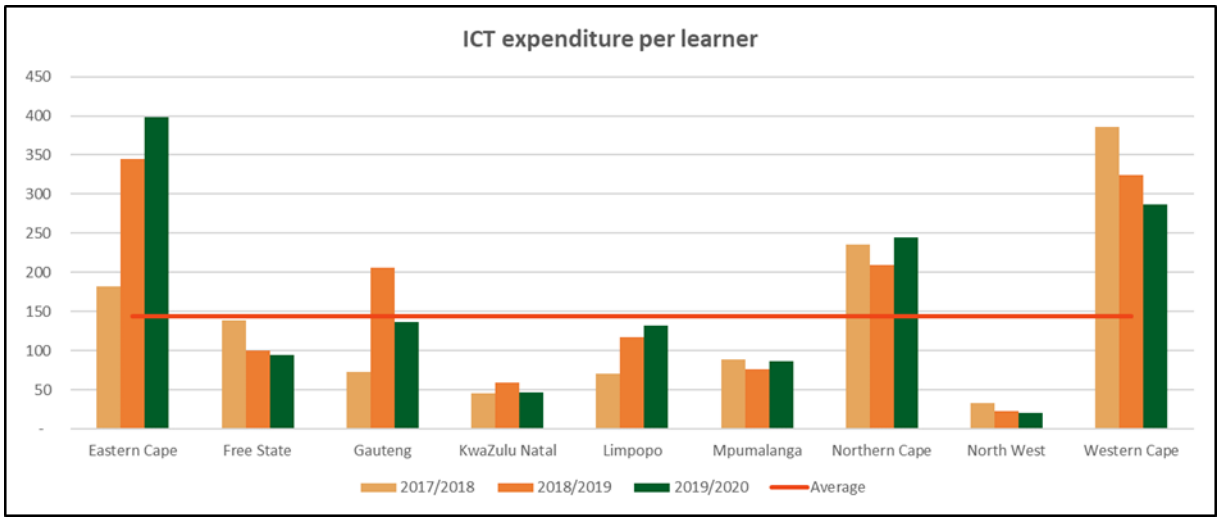


Figure 5 shows ICT expenditure per learner. On average, we spent R144 per learner over the three-year period. While it is difficult to say what the right level of ICT expenditure is, the analysis suggests that ICT is not being prioritised in some provinces because they have other funding pressures.

Across provinces, per learner expenditure varies. Eastern Cape, Northern Cape and Western Cape are the only provinces that consistently spent above the national average. The big policy question that arises from this is, what is the optimal spending on ICT per learner and who should decide this? Should it be left to each province or should the National Department of Basic Education determine this?

Figure 5 ICT expenditure per learner



On the whole, it was difficult to distinguish ICT for administration versus ICT for learners and teaching. It appears that some provinces have captured their ICT expenditure for schools under both the Administration and Public Ordinary Schooling programme.

At this stage of the spending review, there is not enough information on the prices paid by government for the different types of ICT equipment and quantity of items purchased. Without this information, it is difficult to determine how much money government can potentially save.

Nonetheless, the evidence from this analysis, suggests that there is a need for better policy guidance on ICT that will allow for a more structured approach across provinces and prevent funding disparities from increasing over time. Given the amount of money that government is spending on ICT, it could also get better value for money by using smarter procurement approaches. Government could benefit from bulk purchasing by pooling the needs of provinces and negotiating better prices. This approach is like the one used by the Department of Health to buy medicines that has led to a considerable drop in price for chronic medication in the public sector. Using a transversal contract that pre-approves certain providers, at pre-determined price ranges and with similar maintenance contracts might also improve the value we get from public funds.

CONTENTS

Introduction

Information Communications Technology (ICT) is an important teaching and learning aid in basic education. If South Africa is to achieve its objective of preparing the country for the 4th industrial revolution, then the education system must equip learners with the right computing and technology skills. To achieve this goal, Government will have to invest in ICT for learning and teaching. The Basic Education sector is spending on ICT, mostly through Provincial Equitable Share (PES). However, it is difficult to determine what is being bought with the funding spent on ICT. Understanding what government is investing in ICT is critical to formulating evidence-based policy moving forward.

The aim of this spending review is to determine how much is spent by provinces on ICT and what is purchased with these funds. We also benchmark expenditure across provinces to help us understand their different ICT strategies. This will give us greater insight and help improve the cost effectiveness and value for money we get from ICT spending in the basic education sector.

Information was sourced from various policy documents and meetings held with the various stakeholders within National Treasury as well as the National Department of Basic Education. Expenditure data was sourced from BAS for the 2017/18, 2018/19 and 2019/20 financial years. Price information was collected from estimates in Operation Phakisa. As ICT expenditure data does not fall under a specific programme or subprogramme, we had to identify ICT expenditure at the lowest item and asset level (based on the SCOA) and then map this into expenditure buckets. The five expenditure categories are connectivity, hardware, ICT consumable, software and training and systems support. By grouping ICT expenditure, we were able to map ICT expenditure across provincial programmes and financial years.

One of the main challenges encountered during this spending review was distinguishing ICT expenditure for administration purposes versus that for teaching and learning. We initially assumed that all ICT purchased under the Administration programme will be for administration and ICT expenditure under the Public Ordinary Schooling programme will be for teaching and learning. However, we found that provinces are purchasing ICT for learning and teaching and capturing this expenditure under the Administration programme. For example, Western Cape incurs majority of their ICT expenditure under the Administration programme for hardware in support of their Smart School programme.

Policy and Institutional Information

Legislation and policy

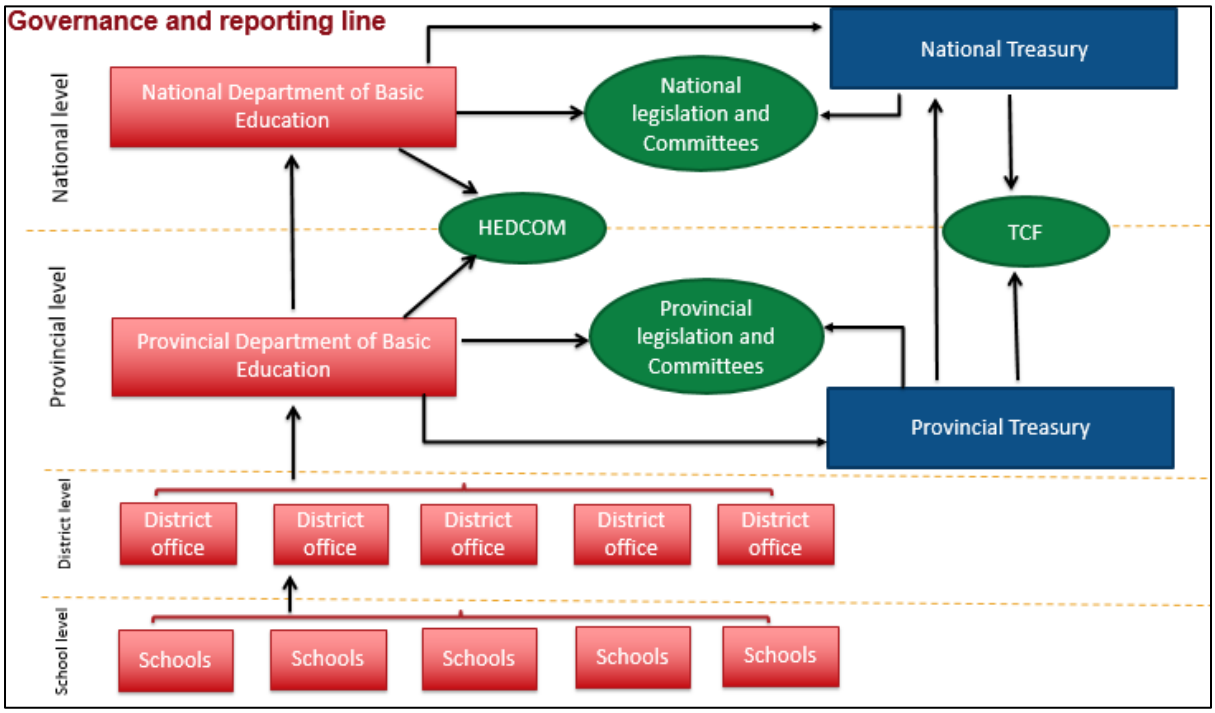
The Constitution is the most important law in the country. The Bill of Rights, contained in Chapter 2 of the Constitution, sets out the fundamental rights of all people in South Africa; these include the right to an education. In terms of section 29, everyone has the right to a basic education, including adult basic education.

Basic education is a concurrent function, delivered by the national and provincial departments of basic education. The most important laws and policies governing the basic education sector include: National Education Policy Act (Act No. 27 of 1996), South African Schools Act (Act No.84 of 1996), National Norms and Standards for School Funding (NNSSF, as amended in 2006), Employment of Educators Act (Act No. 76 of 1998) and the Education Laws Amendment Act (Act No. 24 of 2005). These policies, laws, and regulations govern delivery and monitoring and evaluation of Basic Education they will also apply to the ICT space within Basic education.

Specific policy documents that relate to the provision of ICT is the White Paper on e-Education (2004) and Operation Phakisa (2015), the latter was meant to be an implementation plan to give direction to national and provincial departments. However, recommendations from the Operation Phakisa did not materialise as it was costly to implement without additional funding being provided to the sector.

In practice, the national department develops policies, following all the relevant consultation processes, and provincial departments implement these policies. However, given the lack of policy and implementation direction by national on ICT, there are different approaches being implemented. For example, when it comes to procurement, provinces use their usual procurement process through SITA. In contrast, the National department is making use of a transversal contract designed for office equipment to buy ICT. Figure 6 shows the governance and reporting lines of the basic education system in more detail.

Figure 6 Governance and reporting lines



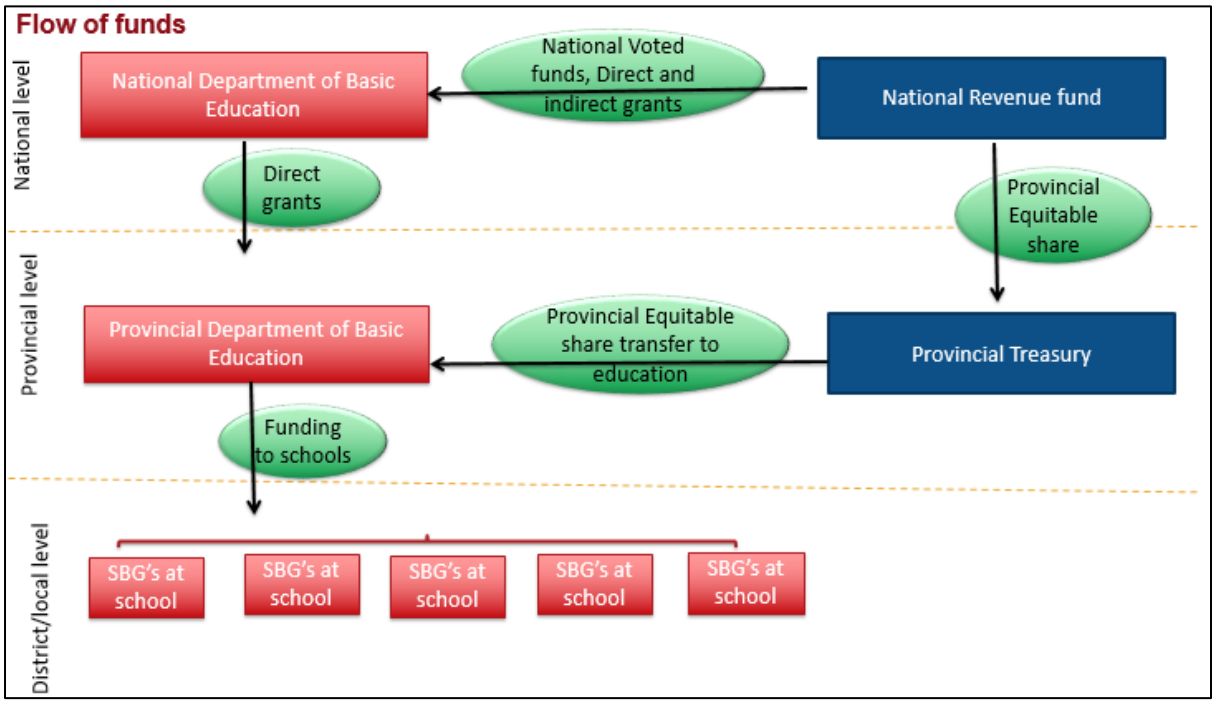
Funding ICT

Figure 7 Funding flow in Basic Education depicts how basic education is funded in the country. The National Revenue Fund provides funding to the National Department of Basic Education through voted funds and direct and indirect (where the national department implements projects on behalf of provinces) conditional grants. Funds flow to the PEDs through the Provincial Equitable Share, which goes through the provincial treasuries. Funds also flow from the National Department to the PEDs through direct conditional grants (funds meant for specific purposes e.g. HIV and AIDS).

In terms of ICT funding, there is an earmarked funding stream through the Mathematics Science and Technology (MST) conditional grant and a provincial stream through provincial equitable share.

Savings, budget cuts, additional funding or reprioritisation are decisions that are made at national and provincial levels (through the national and provincial budget process). The National and Provincial Treasuries also play a pivotal part in this funding process as they run the provincial and national budget process. They run the finances of the country and as a result additional funding requests, budget cuts and reprioritisation of budgets must go through the relevant Treasury.

Figure 7 Funding flow in Basic Education



Roles and responsibilities

There are various stakeholders involved in the procurement, delivery, implementation and monitoring and evaluation of ICT. These stakeholders fall under either one more level of Government (National, Provincial or District/local level). The following are their main roles and responsibilities in the ICT sector of Basic Education.

National Department of Basic Education (National sphere)

The national department is responsible for several functions that affect the sector as a whole and/or requires standardization. The department's responsibilities include but not limited to:

- Develop policies that guide service delivery in the other two spheres. For example, broad ICT policies – such as specification of devices, criteria for which learners or schools should be prioritised for ICT, content of e-learning material etc.
- Develop curriculum that support the use of ICT in schools to allow learning and teaching to evolve with the fourth industrial revolution.
- Assist in procurement of ICT in the most cost-effective way e.g. transversal contracts
- Distribute ICT to provinces or educational districts if procured through voted or indirect grant funding
- Develop relations with various stakeholders in the ICT sector.
- Monitor and evaluate the performance of ICT programme.

- Ensure effective training and development programmes are available to teachers. This will allow effective ICT teaching and learning.

Provincial Departments of Basic Education

- Participates in policy development, costing and approval of policy and implementation plans through various platforms.
- Responsible for the actual service delivery and coordination of district/local level stakeholders.
- Procurement is done through SITA with the assistance of the Government Information Technology Officer (GITO).
- Provide performance and financial information on earmarked funds for ICT e.g. ICT component under the MST grant.
- Provide ICT to provincial offices if they are procured for provincial administration purposes.
- Monitor and evaluate the ICT implementation by service providers at sites of learning and administration offices.
- Determine strategies related to operating cost of ICT.
    - Currently different provinces are implementing different strategies. In Gauteng, because of WIFI in schools, the province pays for connectivity. In Eastern Cape, they have negotiated a special price with provinces. In certain provinces the schools are covering these connectivity costs with their school budgets.

District level

- Uses ICT equipment and services administration purposes in district offices.

Schools

- Receive and insure that ICT equipment by service providers contracted through SITA is installed.
- Acknowledge delivery and then only will payment be made.
- Use the South African School and Administration Management System (SA-SAMS) system to capture this ICT equipment.
- Protect and ensure the ICT equipment are used effectively and efficiently in learning and teaching.

Other stakeholders

- Connectivity is supposed to be the responsibility of the Department of Communication but currently being provided through different strategies across provinces. This is not the most

efficient way to provide connectivity, as the Department of Communication should provide guidance rather than each province determining their own strategy.

- SITA is responsible for testing and certifying ICT equipment to ensure that Government gets value for money. They are also the stakeholder through which all ICT related items will be purchased. Provinces must use SITA's specifications and service providers.
- GITO offices help provinces in developing their own specifications for ICT and these are then submitted to SITA
- Service providers for connectivity varies across provinces. For example, in Gauteng there are WIFI in schools, Eastern Cape negotiated with MTN and Western Cape transfer funds to schools.
- Training institutions that will be responsible for enabling teachers to teach effectively and efficiently using ICT with the related curriculum
- The South African Council for Educators (SACE) aims to enhance the status of the teaching profession through registering educators appropriately, managing professional development and promoting a code of ethics for all educators.

There are various stakeholders involved at all three levels of Government. Some stakeholder's roles and responsibilities are usually spread over one or more spheres e.g. National Department, Provincial Department and SITA. All stakeholders play a vital role, and all rely on each other to deliver ICT services to the Basic Education Sector. However, given the lack of policy and implementation direction in ICT space, there is potential for a more effective and efficient way of providing these services. Although services are being delivered, it is not only fragmented and varies across provinces but also some of these stakeholders are not in place or are inefficient. For example, different provinces are using different strategies for connectivity due the lack of guidance from the Department of Connectivity.

A more coordinated approach may realise better outcomes and better value for money. As indicated previously there is no common strategy or policy that is adopted by the sector to deal with connectivity. However, the National Department of Basic Education is working to make a platform freely available to all learners by zero rating these learning platforms. This will allow for better value for money as provinces will save on data cost.

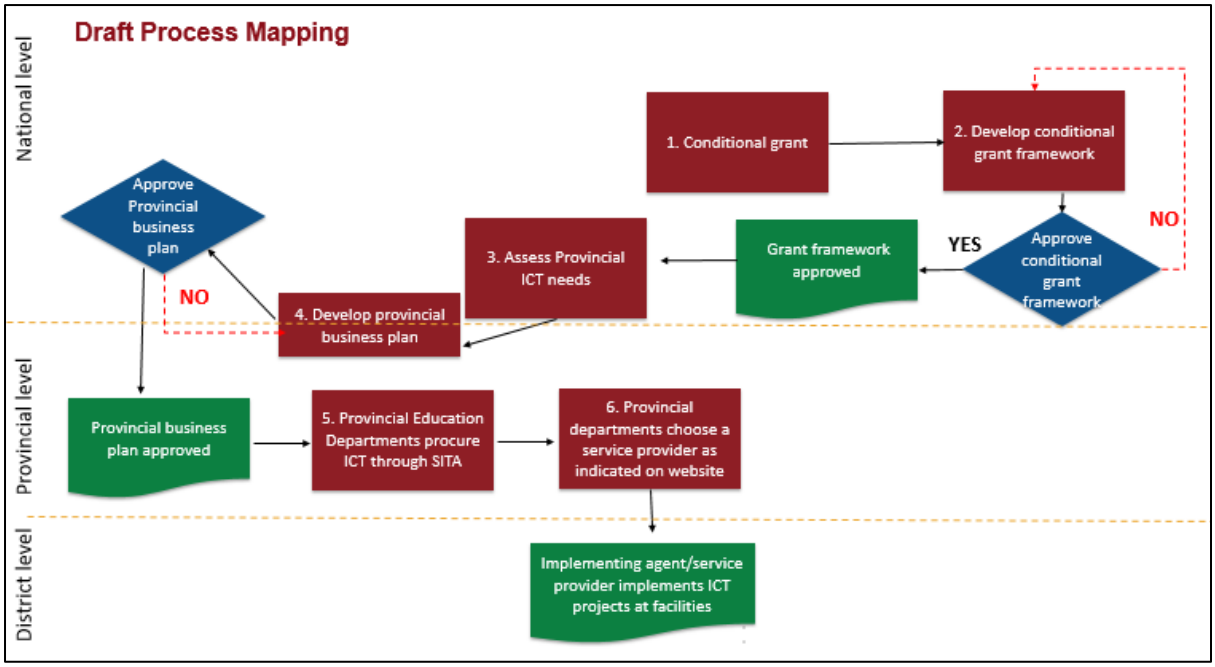
Programme Chain of Delivery

ICT is currently being funded through two revenue sources. The direct MST grant, which only accounts for 2.5 percent of the total ICT budget over the past three years, and provincial equitable share.

MST grant

Funds allocated to the National Department of Basic Education through the Maths Science and Technology grant. Within this grant framework there is an ICT component that sets out the funding allocation and targets. These funds are then transferred to provinces to be utilised for ICT related tasks. There is currently no transversal contract in place for the procurement of ICT related to teaching and learning. The National Department however is currently working with the Office of the Chief Procurement Officer (OCPO) and SITA to develop specifications for education specific devices. While provinces do develop the ICT specifications with SITA's regional offices, they use their own procurement processes. In contrast, the National Department uses a transversal contract design for office equipment.

Figure 8 Process mapping of ICT in Basic Education for the MST grant



Provincial Equitable Share

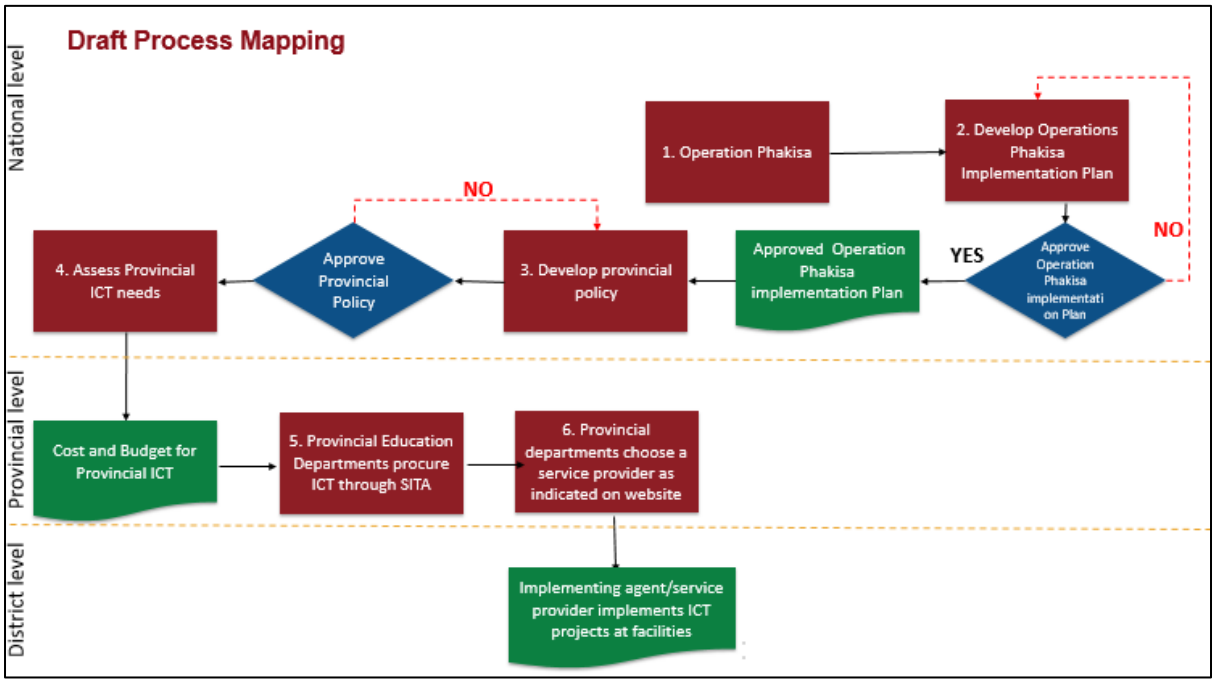
Provinces allocate funds from their equitable share to purchase ICT equipment for administration and teaching and learning. These funds are not earmarked or ring fenced and as a result funding varies across provinces and for different purposes based on their own priorities e.g. Free State for broadcasting and Eastern Cape for purchasing of laptops. GITO together with the PEDs develop specification of the ICT equipment they require and then go through SITA for procurement.

SITA plays a pivotal role in the ICT space as they are the institution that tests and certifies all ICT equipment based on specifications from departments. They also determine the service providers that departments can use. All procurement of ICT, by National and Provinces (MST

grant and PES) must be done through SITA. Departments develop specifications, then get quotes through SITA, proceed to choosing a service provider, service provider provides the service and finally payment is made (see Figure 9).

There is still a lot of room for improvement in the way ICT is purchased in the Education sector. There is a need for a more coordinated approach between the national and provincial departments by utilising transversal contracts to get better value for money. Furthermore, greater policy and implementation direction on ICT is required so that disparities between provinces in the use of ICT in education do not accelerate over time. These changes will improve both effectiveness and efficiency in the ICT space within Basic Education.

Figure 9 Process mapping of ICT in Basic Education for provincial equitable share



Performance Analysis

There have been two funding streams for ICT over the past three years. The MST grant, accounted for only 2.5 percent of spending and Provincial Equitable Share which make up the remaining 97.5 percent spending. After reviewing both the national and nine provincial departments annual reports and annual performance plans, we could not find any specific performance indicator that related to ICT. It is for this reason that we had to find alternate ways to determine some performance information.

What does the Mathematics Science Technology Grant buy?

The MST grant has a framework that indicates the conditions, allocations and targets for the grant. These frameworks are reviewed each year and criteria might change depending on the

need. There is a quarterly report that is provided to National Treasury that has some performance information related to the ICT component of this grant (see table 1 below). In relation to the MST grant, the conditional grant has met and exceeded its target of supplying hardware but not software to schools. Presumably, the subject specific software is meant to aid learning and teaching. Finally, the MST grant has underperformed on the training of teachers to use ICT in the classroom.

Table 1 Example of performance information from MST quarterly report related to ICT for 2018/19

SUMMARY: NON-FINANCIAL REPORT											
OUTPUT	Output Performance Indicators	Annual Business Plans Targets									
		Quarter 1		Quarter 2		Quarter 3		Quarter 4		Total	
		Target	Achieved	Target	Achieved	Target	Achieved	Target	Achieved	Target	Achieved
Information, Communication and Technology (ICT) Subject Specific Resources	Number of School Supplied with subject specific **Hardware** in accordance with minimum specification prescribed by CAPS	203	51	249	836	85	0	21	0	558	887
	Number of School Supplied with subject specific **Software** in accordance with minimum specification prescribed by CAPS	0	0	204	263	135	0	0	0	339	263
	Number of teachers participate in training and support in the **Integrating ICT** in learning and Teaching environment based on the structured programme	20	20	538	0	1 710	0	0	0	2 268	558

What does the Provincial Equitable Share buy?

It was difficult to get any administrative or performance data on expenditure funded through PES. To understand what was bought, we used the Operational Phakisa costing for ICT devices, adjusted it by inflation to get prices for the 2017/18 to 2019/20 financial years (table 2). However, there were no unit cost provided for desktops and we assumed that this cost to be approximately R8 000 in 2015.

Table 2 Pricing assumptions

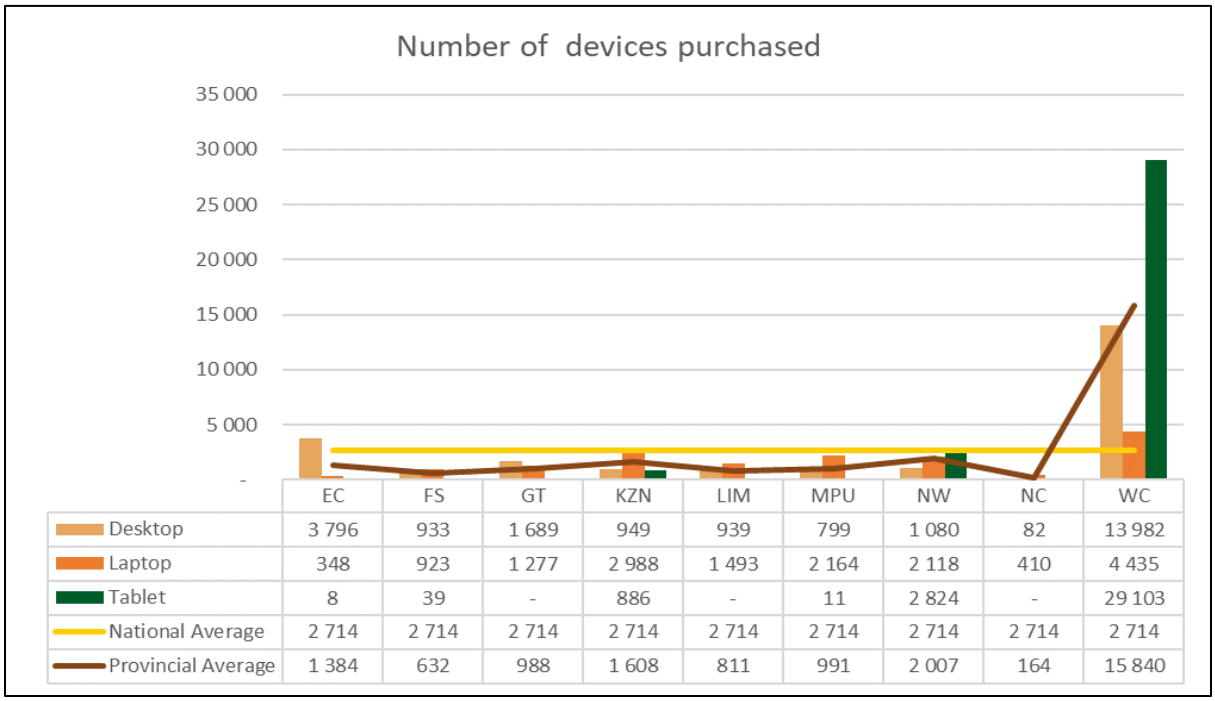
ICT device	Cost based on Operation Phakisa	Cost based on inflation growth		
Rands	**2015**	**2016**	**2017**	**2018**
Table	4 500	4 784	5 037	5 274
Laptop	10 000	10 630	11 193	11 719
Desktop	8 000	8 504	8 955	9 376
Inflation estimates		6.3%	5.3%	4.7%

We then pulled out total expenditure on desktops, laptops and tablets from our BAS data and determined how many units of each device provinces purchases over the past three years. Total expenditure on these devices accounts for 10.9 percent or R584 million of the total ICT budget. However, expenditure on hardware equates to R1.4 billion or 26 percent of total ICT expenditure, which means that some provinces are spending more on other types of hardware e.g. photocopiers, servers etc.

Figure 10 clearly depicts that the WC has substantially invested in devices over the past three financial years. On average, the number of devices (15 840) bought by WC over past three years is more than six times the national average (2 714 devices). All other provinces are well below the national average for devices purchased over the same period. All provinces, except for NW and WC, have chosen to purchase desktops and laptops over tablets. Tablets are usually purchased and given to learners and it seems like their strategies are more focused on ICT for teaching and learning.

From the data, it was difficult to differentiate between ICT devices purchased for administrative purposes versus devices purchased for teaching and learning. This is mainly due to provinces capturing ICT expenditure for schools under both the Administration and Public Ordinary Schooling programme e.g. Western Cape incurs majority of their ICT expenditure under the Administration programme for hardware. It might there be useful for the National Treasury's Public Finance Statistics team to provide further guidance on how to categorise ICT expenditure.

Figure 10: Estimated number of ICT devices purchased across provinces



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National Average	2 714	2 714	2 714	2 714	2 714	2 714	2 714	2 714	2 714
Provincial Average	1 384	632	988	1 608	811	991	2 007	164	15 840

Expenditure Observations

Methodology

Expenditure data for the nine PEDs was sourced from the BAS. This data was then cleaned and filtered into three budget programmes and five ICT categories. As mentioned earlier, the

expenditure data does not fall under a specific programme or subprogramme, therefore we had to determine which economic classifications relate to ICT. To do this we had to go through SCOA and then identify the lowest item and asset levels that we could map to ICT. After determining approximately 85 item and 25 asset lowest levels related to ICT, we then had the total expenditure for ICT. However, to determine what provinces are purchasing we then grouped these assets and items (based on their respective SCOA definitions) into five expenditure buckets:

1. Connectivity
2. Hardware
3. ICT consumable
4. Software
5. Training and systems support

These ICT item and expenditure buckets allowed us to map ICT expenditure across provincial programmes and financial years. This allowed us to determine; how much each province spends on ICT per year, under which programme ICT spending was incurred and what categories of ICT were purchased (expenditure buckets). We were then able conduct analysis across provinces to get a better insight into provincial strategies.

Main Expenditure analysis finding

Table 3 illustrates expenditure by the nine PEDs from 2017/18 to 2019/20. Total expenditure, over the past three financial years on ICT amounted to approximately R5.3 billion or 0.7 percent of the total provincial basic education budget. Due to budget cuts and pressures within budgets, provinces seem to prioritise other areas of spending (compensation of employees, subsidies to schools and infrastructure) over ICT. Given that there is no earmarked funding for ICT aside from the MST grant, provinces don't have an obligation to keep growing their ICT budgets and as a result funding not only varies across provinces but also within provinces from one year to the next. In addition, some of the changes in ICT expenditure is because of the durable nature of hardware and cyclicality of software. For example, hardware has a longer life span and most probably need to be replaced every three to five years. While software might have to be renewed every year. So, it might be that different provinces, or the same province needs different types of ICT. It is for this reason that a longer time-series analysis will provide greater insight on each province's strategy.

Provincial expenditure varies across provinces, with WC spending the highest portion of their budget (1.7 percent or R1.1 billion), followed by Eastern Cape at 1.6 percent or R1.6 billion. Northern Cape spends the lowest, equating to 0.3 percent or R61.4 million of their total budget.

Four provinces, Eastern Cape, Western Cape, Gauteng and Limpopo accounts for 80 percent of the total expenditure, further highlighting the discrepancies on provincial spending on ICT.

In terms of the provincial rankings on expenditure over the past three years, we see very little movement by each province. Eastern Cape, Limpopo and North West have moved up one position, with Eastern Cape being ranked first at the end of 2019/20. Free State and Western Cape moved down a single position, from seventh to eighth and first to second respectively. All other provinces have remained the same in their respective rankings. This means provincial expenditure has not changed much over time and those that spent the highest and lowest continue to do so. The discrepancies in expenditure between provinces have remained much the same over the past three financial years.

Table 3 Expenditure on ICT by province

	Expenditure				%of Total				Change in	
Province	2017/2018	2018/2019	2019/2020	Total	budget	2017/2018	2018/2019	2019/2020	Ranking	Grand Total
Eastern Cape	317 545	611 699	704 322	1 633 566	1.6%	2	1	1	-1	1
Free State	94 646	68 928	65 948	229 521	0.6%	7	7	8	1	7
Gauteng	164 130	434 057	293 165	891 352	0.7%	3	2	3	0	3
KwaZulu Natal	127 970	163 530	128 353	419 853	0.3%	4	5	5	1	5
Limpopo Province	121 454	193 956	223 567	538 978	0.6%	5	4	4	-1	4
Mpumalanga	96 028	77 926	92 157	266 110	0.4%	6	6	6	0	6
North West	68 497	60 909	71 916	201 322	0.4%	8	8	7	-1	8
Northern Cape	26 080	18 775	16 557	61 411	0.3%	9	9	9	0	9
Western Cape	420 805	351 924	322 975	1 095 704	1.7%	1	3	2	1	2
Grand Total	**1 437 154**	**1 981 703**	**1 918 959**	**5 337 817**	**0.7%**					

ICT expenditure by budget programmes

Provincial departments have a standardised budget structure with seven programmes. Whereas this makes analysis easier, there are large differences in the way provinces code and allocate expenditure to SCOA items.

For this expenditure review we have analysed expenditure into the following three programmes:

- Administration programme- based on the programmes objectives we assumed all ICT related expenditure will be for administrative purposes
- Public Ordinary Schooling Education programme- based on the programmes objectives we assumed all ICT related expenditure will be related to teaching and learning.
- Other programmes refer to ICT spending incurred under the other five programmes (Independent School Subsidies, Public Special School Education, Early Childhood Development, Infrastructure Development and Examination and Education Related Services).

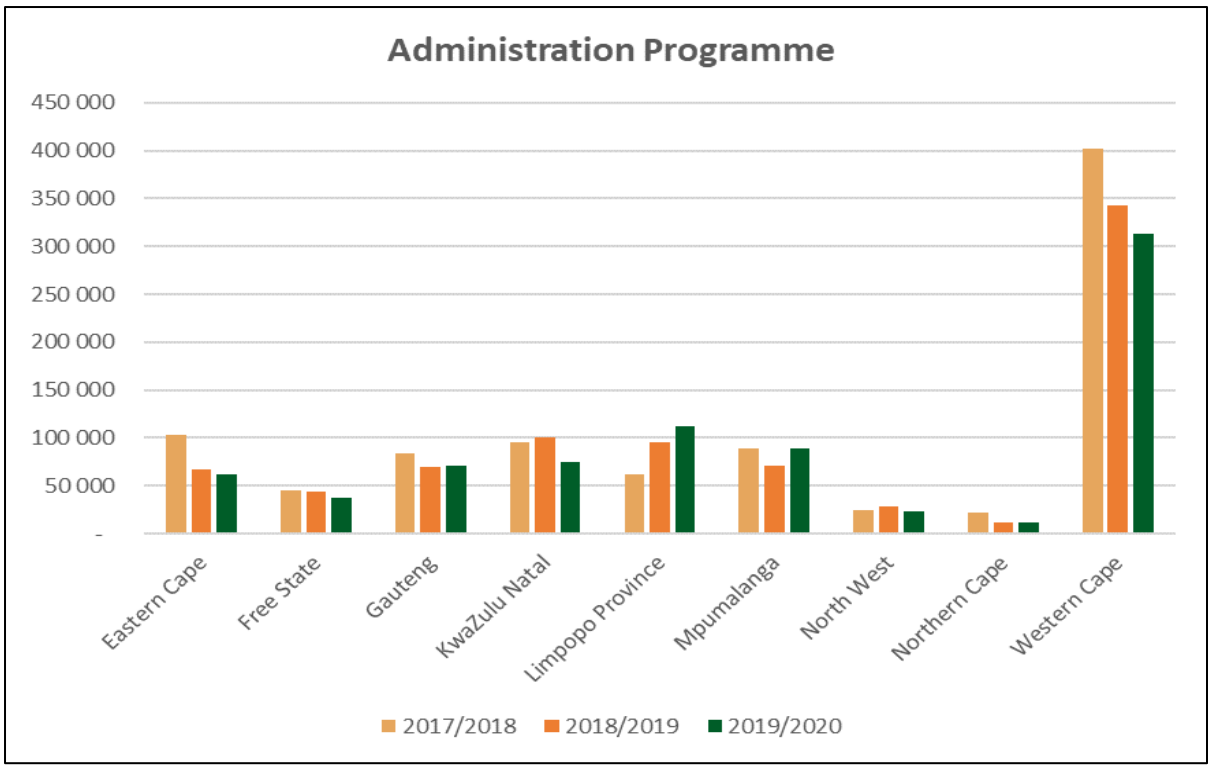
Before this spending review we assumed all expenditure under this programme was purchased for administration proposes only. However, we have found that ICT under this programme was incurred for administration and teaching and learning purposes. For example, Western Cape incurs majority of their ICT expenditure under the Administration programme,

for hardware in support of their Smart School programme. Approximately 55 percent of the expenditure under the Administration programme was allocated under the Education Management Information System (EMIS) subprogramme.

The Administration programme (Figure 11) accounts for the highest portion of total ICT spending. It equates to R2.5 billion or 47.8 percent of the total. All provinces except for Western Cape spends approximately R100 million or less over the past three financial years, with Free State, North West and Northern Cape spending well below R50 million each year on ICT. Limpopo is the only province that has increased its budget over the three-year period, with majority of the spending under ICT consumables. Eastern Cape and Western Cape spending has decreased, while all other provincial expenditure fluctuates over the period of analysis. Western Cape spent around 91 percent or R1 billion of their total ICT budget under the Administration programme. Western Cape not only spends majority of its budget under this programme but also spends more than four times the amount of the next highest province, KwaZulu Natal. The majority of Western Cape's expenditure was on hardware in support of their Smart School programme. The Smart School programmes aims to connect schools across the province to improve administration and teaching and learning. There are five pillars to the Smart School programme:

- **E-technology**: Providing access to reliable connectivity and support systems to schools in the Western Cape.
- **E-content**: Providing up to date and CAPS aligned digital content that responds to the needs of learners.
- **E-Teachers**: Equpping principals, School Management Teams and teachers with the skills to use technology effectively.
- **E-Culture**: Creating the right environment for the roll out of e-learning platforms.
- **E-Admin**: digitising and automating administrative tasks to reduce the time spent by principals, teachers and school management teams

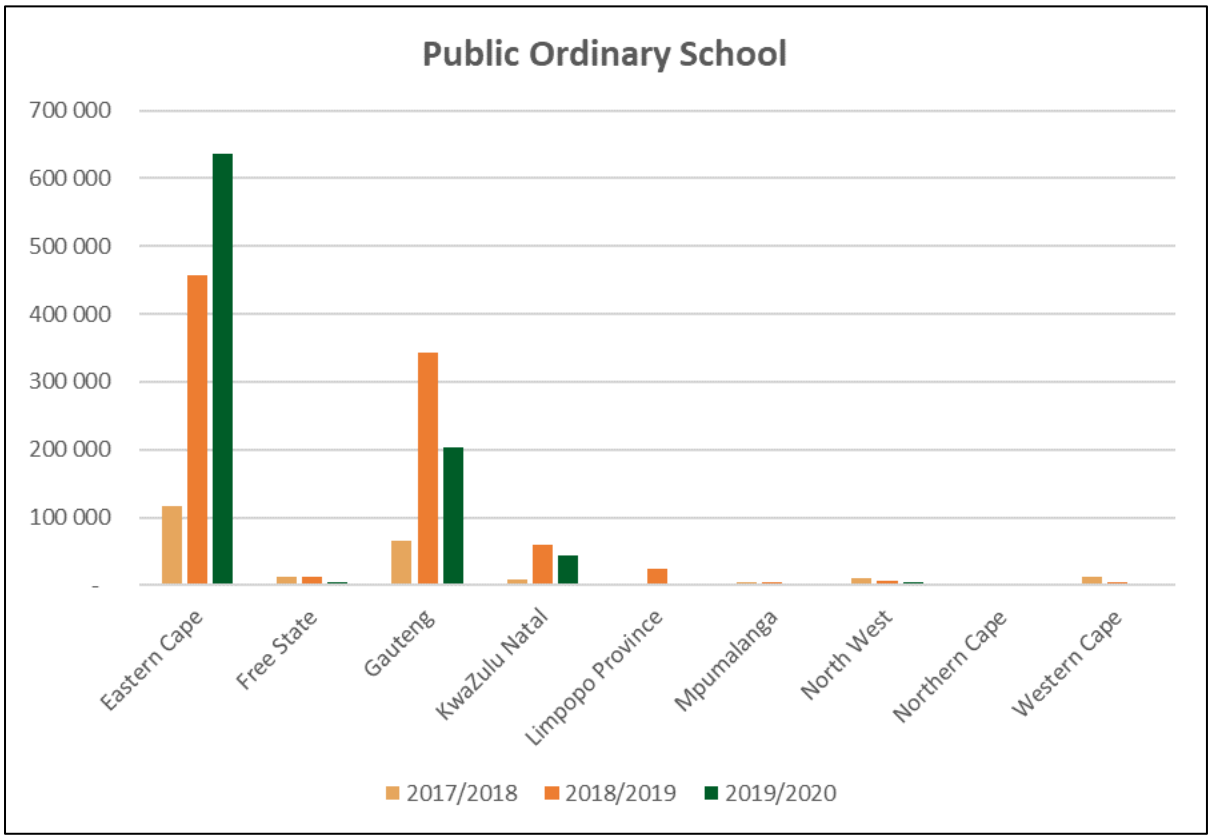
Figure 11 Expenditure on ICT under the Administration programme



The Public Ordinary Schooling programme funds the majority of expenditure on basic education. This programme accounts for 80 percent of the total provincial basic education budget, and includes payments for teachers' salaries and subsidies to schools are incurred under this programme. ICT spending under the Public Ordinary School programme equates to R2 million or 38 percent of the total ICT spending. All ICT purchased under this programme is assumed to be for teaching and learning only.

Figure 12 Expenditure on ICT under the Public Ordinary School programme

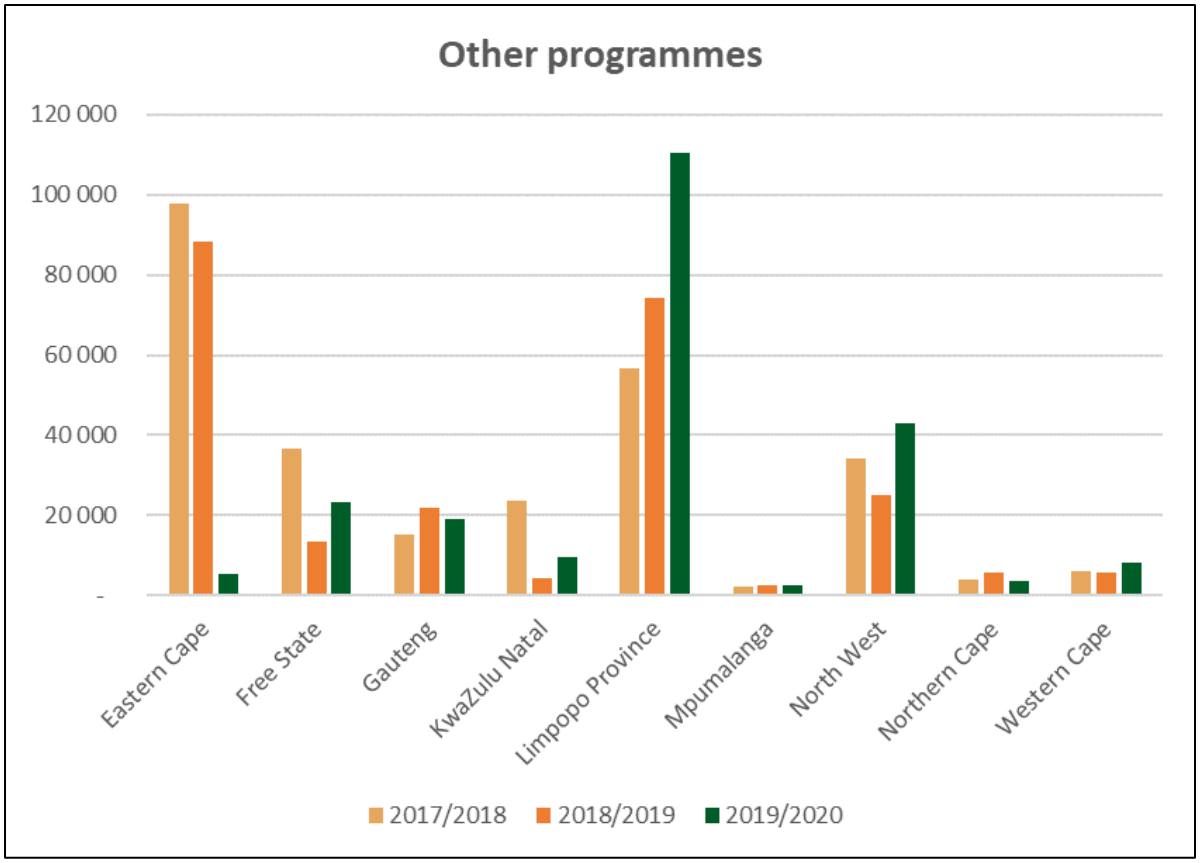
Figure 13: Expenditure on ICT under Public Ordinary Schooling



Two provinces, Eastern Cape, and Gauteng invest majority of their ICT budgets under this programme. Eastern Cape spends R1.2 billion or 74 percent of their ICT budget mainly on connectivity. Gauteng spends approximately R611 million or 69 percent of their ICT budget, majority of this expenditure on for software. All other provinces spent less than R60 million per year. The other seven provinces invest more under the Administration programme than the Public Ordinary Schooling programme.

Figure 14 accounts for the least amount of ICT spending, equating to R743 million or 14 percent of total ICT spending. North West is the only province to spend more on ICT in these programmes, 50 percent or R201 million, mainly on hardware and software. This indicates that the province is prioritising ICT in other programmes over administration and teaching and learning. Limpopo is the only province that has substantially increased expenditure under these programmes (45 percent or R241 millions of their ICT budget), mainly on ICT consumables.

Figure 14 Expenditure on ICT under Other programmes

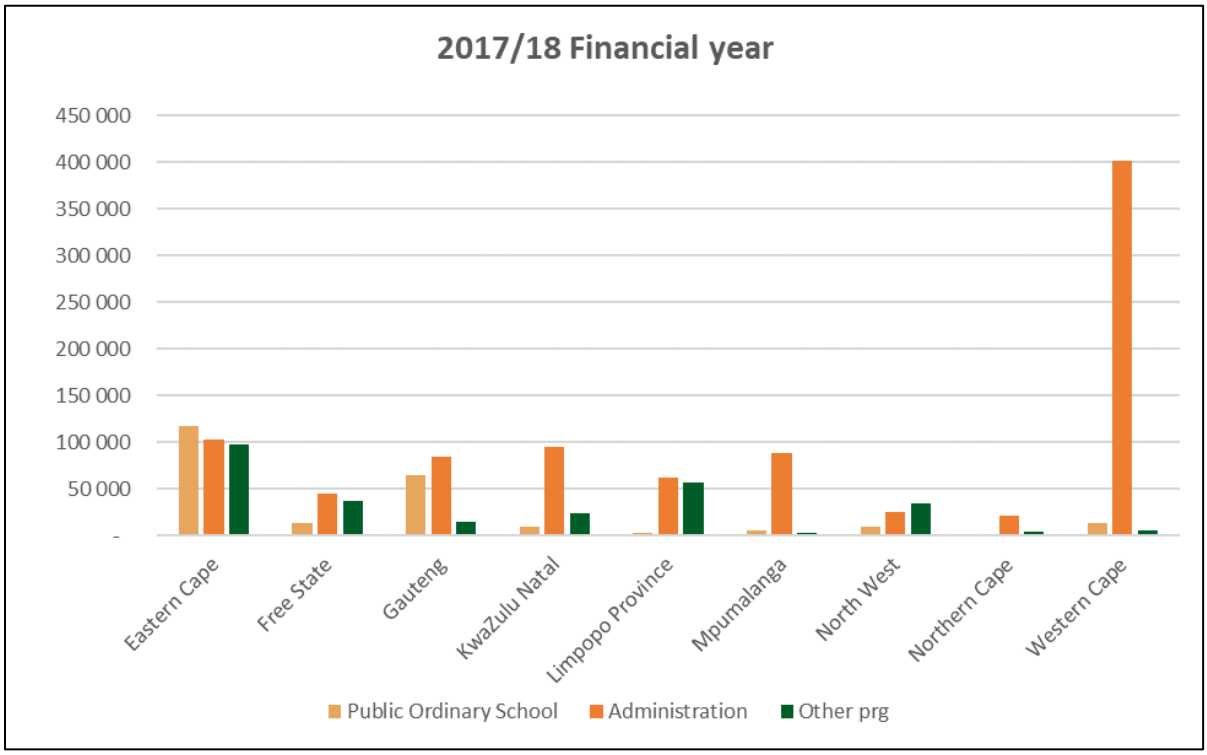


ICT expenditure by financial year

Expenditure across the three programme categories was then mapped for each year to get a better understanding of provincial strategies.

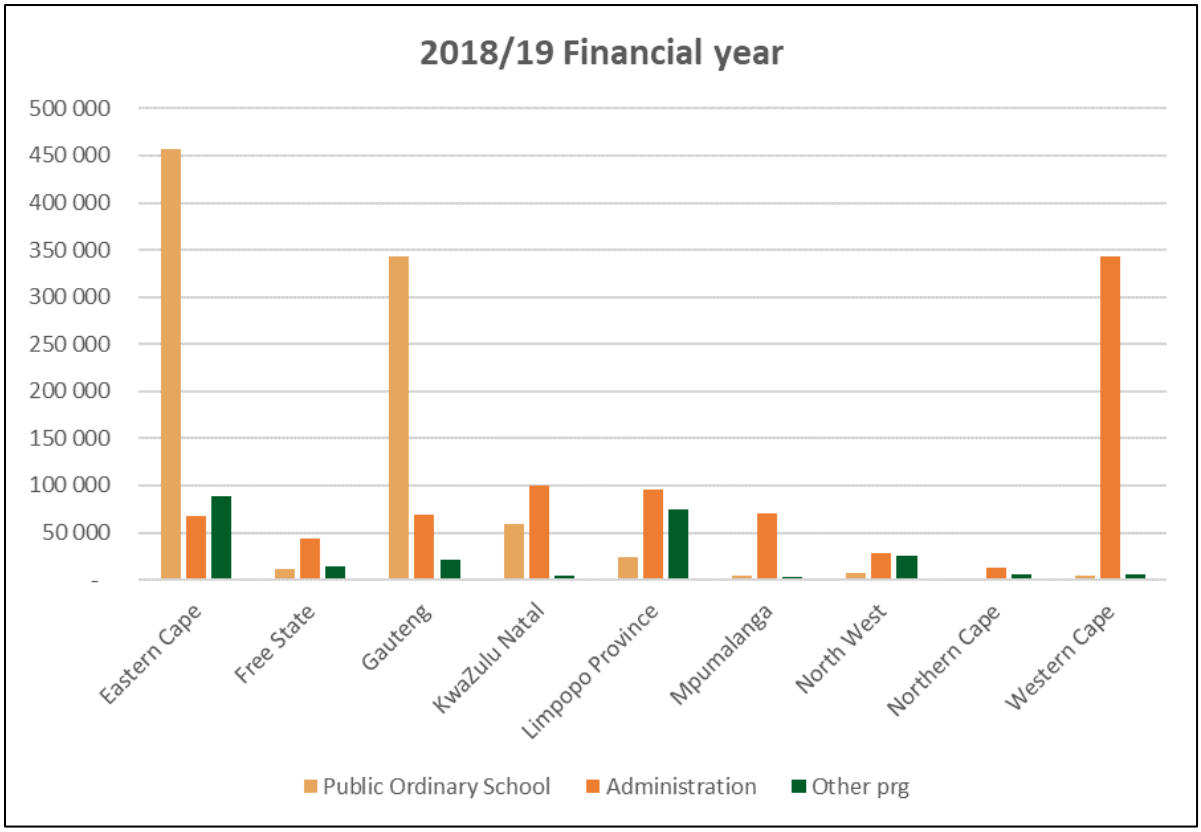
Approximately 27 percent or R1.4 billion of the total ICT budget was spent in 2017/18 (figure 14). All provinces with the exception of Eastern Cape spent the most under the Administration programme. Western Cape spends significantly more than other provinces on ICT, almost four times more than the second highest province, Eastern Cape. This expenditure is mainly on hardware for their smart school's project. Western Cape, as is the case with other provinces, purchases ICT under Administration also for teaching and learning. Eastern Cape is the only province that spends more under the Public Ordinary Schooling programme, mainly on connectivity. The only province that spends more under the other five programmes is North West, mainly on hardware and software.

Figure 15 Expenditure on ICT for the 2017/18 financial year



In the 2018/19 financial year, the basic education sector spent approximately 37 percent or R2 billion of the total ICT expenditure (see Figure 16). The major change in expenditure from the previous financial year is in Eastern Cape and Gauteng. Eastern Cape and Gauteng substantially increased their expenditure under the Public Ordinary Schooling programme, majority being spent on connectivity and software (Gauteng for their smart schools) respectively. All other provinces once again spent more under the Administration programme.

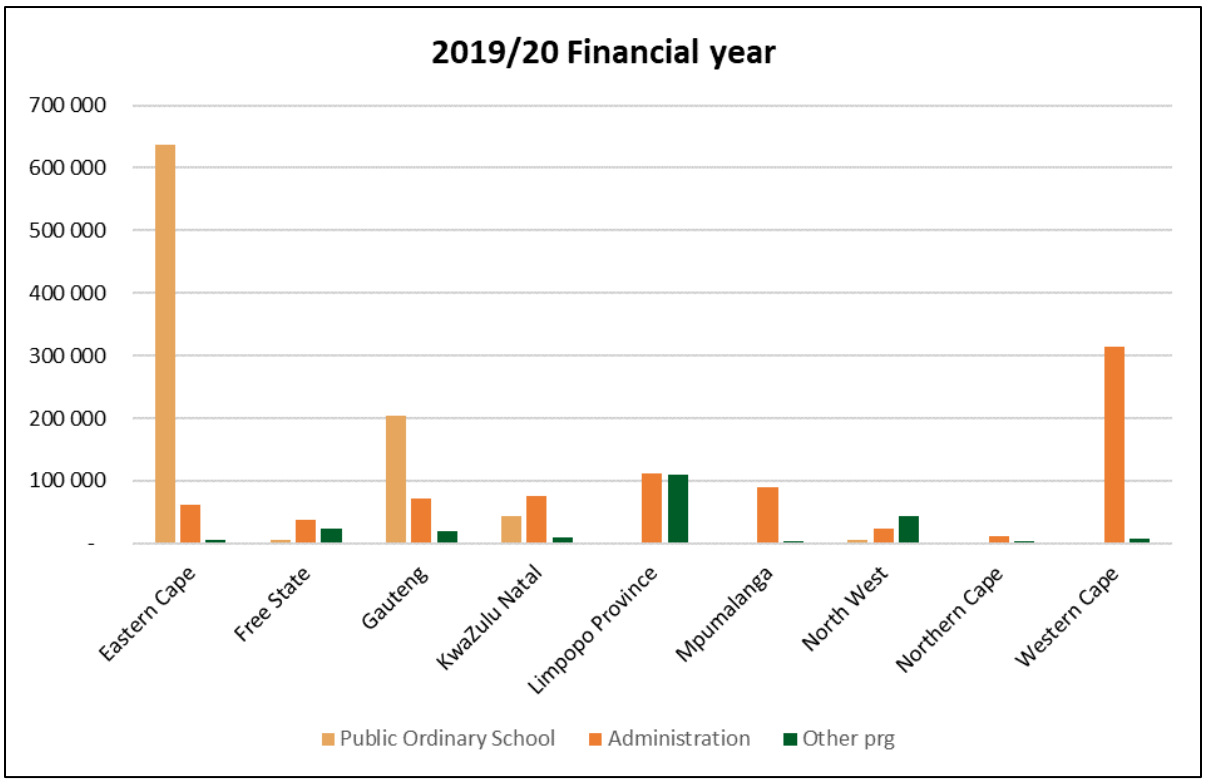
Figure 16 Expenditure on ICT for the 2018/19 financial year



The 2019/20 financial year accounted for 36 percent or R1.9 billion of the R5.3 billion total ICT spending (see Figure 176). Expenditure trends still skewed towards Administration over the other programmes, with Eastern Cape and Gauteng being the only provinces to spend more under the Public Ordinary Schooling programme. North West once again is the only province to spend more on other programmes. This indicated that the province is prioritising ICT for other purposes over ICT for administration and teaching and learning. North West and Limpopo has a completely different strategy from all other provinces.

It is clearly evident from the expenditure figures by programme, that different provinces have different criteria and they are pursuing different strategies.

Figure 17 Expenditure on ICT for the 2019/20 financial year



Expenditure on ICT by category

The expenditure data was grouped into five expenditure buckets (connectivity, hardware, ICT consumable, software and training and systems support) and mapped by province for the past three financial years. This allowed us to get a better understanding on the strategies that provinces are pursuing in providing ICT.

Figure 18 ICT expenditure by category (2017/18-2019/20)

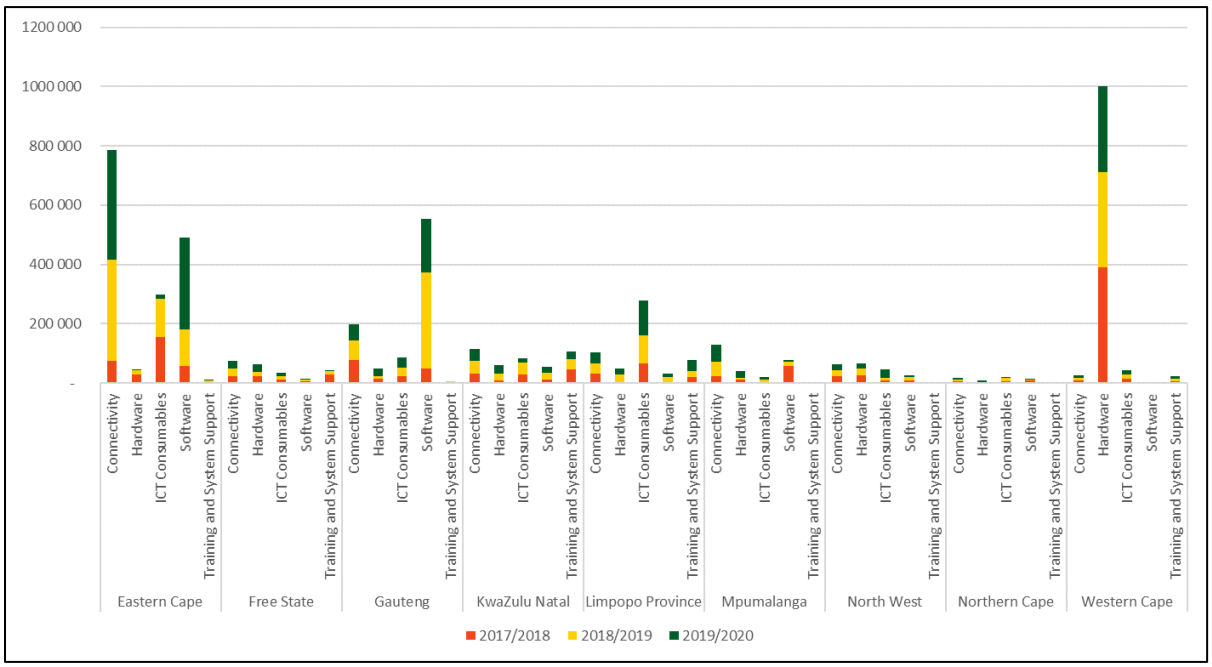


Figure 187 reveals that different provinces have their own strategies and are prioritising different categories of ICT. For example, Western Cape prioritising hardware for their smart school's project, Eastern Cape on connectivity, Gauteng more on software and Limpopo on ICT consumables. Not only are strategies different across provinces but also within provinces over time e.g. Gauteng focused on connectivity in 2017/18 and then the next two years on software and Mpumalanga on software in 2017/18 and then on connectivity in 2008/19 and 2019/20. The training and systems support category incurred the least expenditure and this might be due to provinces classifying this expenditure under a different item level, which does not relate to ICT.

Furthermore, ICT takes time to deliver and requires certain categories before others e.g. connectivity before hardware and then software. Training and systems support might be the last step once ICT facilities/equipment are operational and will likely increase towards the end of an ICT project.

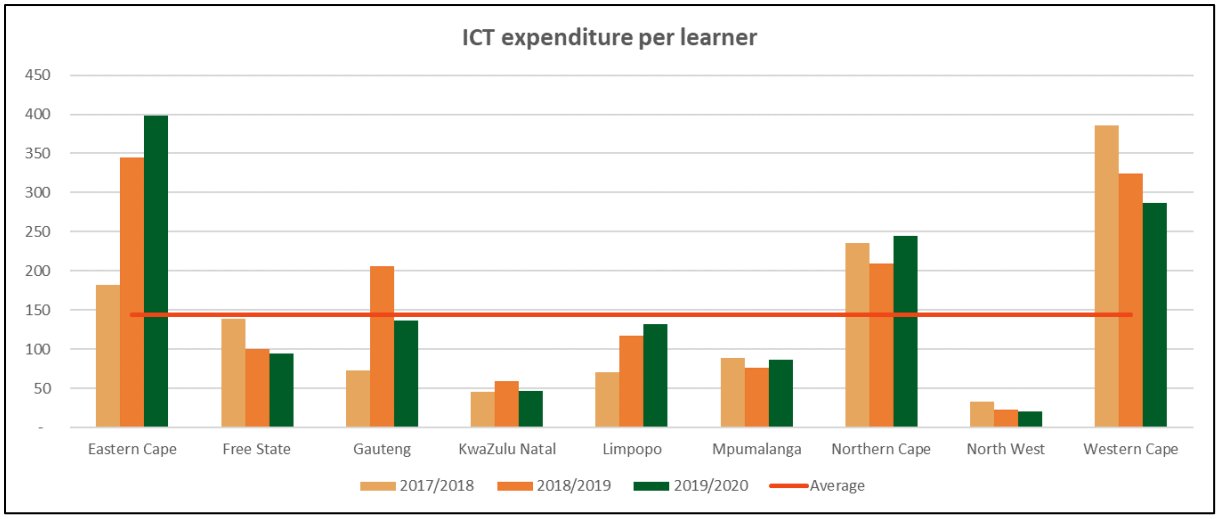
The expenditure analysis clearly indicated the different strategies that provinces are undertaking in providing ICT. This fragmentation is mainly because of lack of implementation and policy guidance by the National Department of Basic Education. The main concern is these different approaches could eventually lead to different educational outcomes across provinces.

Expenditure per learner on ICT

Figure 19 looks at ICT spending per learner for each of the nine provinces. This allows us to compare ICT funding per learner across provinces and determine not only how provinces compare against each other but also to the national average. It will also provide insight to link ICT funding to learning outcomes, to see if higher expenditure per learner results in better educational outcomes. Do provinces that spend more on ICT have better educational outcomes?

ICT expenditure per learner was calculated by taking total expenditure on ICT, by each province, over the past three years and dividing that by the total number of learners in Public Ordinary Schools over the same period. The national ICT expenditure per learner was calculated by using the average of all nine provincial per learner expenditure.

Figure 19 ICT expenditure per learner



On average, the Basic Education sector spends R144 per learner on ICT related expenditure. This indicates that ICT is not being prioritised in provinces, possibly because of other funding pressures e.g. subsidies for learners as learner numbers increase, infrastructure etc. Another factor that might be influencing the low spending is there are no national funding norms and standards for ICT.

However, per learner expenditure on ICT in each province expenditure varies. Eastern Cape, Northern Cape and Western Cape are the only provinces that consistently spent above the national average over the period of analysis. Eastern Cape and Western Cape have invested the most in ICT, more than double the national average at R308 and R332 per learner over the past three years. KwaZulu Natal, Mpumalanga and North West spent the least per learner at R50, R84 and R25 respectively, over the past three financial years. In these provinces, there might be funding pressures crowding out spending on ICT. This is especially true if KwaZulu Natal and Mpumalanga don't even meet the minimum National funding norms and standards for learner subsidies. Limpopo is the only province that has gradually increased its funding per learner over the past three years, while Free State and North West show a decrease in per learner funding over the same period.

Against this background, it is difficult to say what is the optimal ICT expenditure per learner. Even though, the Eastern Cape and Western Cape spend more than double the national average, it is not possible for this spending review to determine whether these levels of expenditure are optimal or not. The policy question that arises from this is, what is the optimal spending on ICT per learner and who should decide this? Should it be left to each province or should the National Department of Basic Education determine this?

Options

At this stage of the spending review we do not have enough information on the cost and quantity of ICT related items purchased. Due to these limiting factors it was difficult to determine savings. However, through the analysis we have identified several improvements to the policy space and efficiency gains from smarter procurement:

- **Policy**: better policy guidance on ICT is required e.g. national funding norms and standards for ICT. This will help allow for a more structured approach across provinces and prevent funding disparities from increasing over time, given that majority of the ICT spending is from provincial equitable share. The main disadvantage is funding norms and standards might not lead to the best value for money and does not address delivery/logistic issues e.g. delivery of ICT to learners.
- Procurement system: currently there are no transversal contracts in place for ICT. Transversal contracts could improve efficiency by allowing provinces to pool together funds to procure the same ICT items. However, it will have to be implemented correctly. It will not guarantee that the sector will get the lowest price and therefore suggest that the National Department of Basic Education and the OCPO monitor the prices of different categories of ICT purchased. This way we can determine if the Basic Education sector is getting value for money through the transversal contract or not.

Recommendations

The following are the main recommendations from this spending review:

- There is a need for better policy and implementation guidance on ICT in the basic education sector. This will prevent the current fragmented approach across provinces and will more importantly prevent different educational outcomes.
- The sector can get better value for money by using smarter procurement approach including bulk purchasing, transversal contracts and price monitoring.
- Need to better understand the current strategies that provinces are implementing and find best practices that can help with the development of national policy and implementation guidelines, which still needs to be developed

Actions

Due to limited performance and costing information at hand, this spending review was unable to provide information on savings and the best practices across provinces and countries. To deepen the analysis, the spending review will continue into another phase that involves:

- Using LOGIS data from provinces to determine the unit prices at which ICT is purchased and quantities.
- Analysing the asset register data from SA-SAMS.
- On-going consultations with provinces to better understand their strategies, procurement and monitoring and evaluation of ICT.
- Conduct a longer time-series analysis to get a better picture of provincial ICT strategies. This is required given the different lifespan of different ICT categories.

Appendices

Logframe

IMPACT		**Improve learning and teaching for the twenty-first century by ensuring learners are ICT literate.**				
Indicator		1) Unit cost per device across different province 2) Number of ICT devices per 100 or 1000 learners across districts and provinces				
Frequency						
Source of data						
OUTCOME		**Greater accessibility to ICT equipment**		**Improved educational outcomes and keep up with the fourth industrial revolution.**		**Increased number of learners that have ICT skills**
Indicator		1) Unit cost per device across different province 2) Number of ICT devices per 100 or 1000 learners across districts and provinces				
Frequency						
Source of data						
Final Output		**Number of fully functioning ICT devices provided to learners/ schools**				
Indicator						
Frequency						
Source of data						
Intermediate outputs		**ICT policy**		**Procured devices**		
Activities		**Efficiency in spending across provinces**				
Indicator		Output vs cost by province				
Frequency		Annually				
Source of data		BAS and documents containing performance indicators				
Activities		**Provincial cost and implementation plan**		**Payment of services provided**		
Indicator		Amount allocated/spent on ICT on sites of learning		Principal signs for delivery of ICT and then provincial department makes payment		
Frequency		Annually				
Source of data		BAS				
Activities		**Approved ICT policy**		**Service provider deliver and install ICT at sites of learning**		**Maintaince and operating cost of ICT**
Indicator		Government gazette		What provinces order vs what is delivered to schools		Provinces have different models
Frequency						
Source of data						
Activities		**Prepare policy on ICT**		**Provinces determine specification and service provider through SITA**		**Training teacher on how to utilise these ICT equipment**
Indicator		Policy approved by DG		ensure service provider is registered through SITA		Training programme approved by National Department
Frequency						As needed
Source of data						
Inputs		**District circuit manager, school principal, school teachers**		**Electricity, secure facility at site of learning, Hardware, software and connectivity**		**Training of teachers**
Indicator						
Frequency						
Source of data						
Programme elements		***Develop policy framework***		***Public Ordinary School***		***Training and development of teachers***
Responsibility		Director: Policy Unit (Programme 1)		CD: Public Primary level CD: Public Secondary level		CD: Human Resource Development