

# **Comparison of the National Senior Certificate Examinations Administered by the Department of Basic Education: 2013 – 2015**

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Accounting, Business Studies, Economics,  
Geography, History, Life Sciences, Mathematics,  
Mathematical Literacy and Physical Sciences

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**December 2015**

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## 1.1 Accounting

### 1.1.1 Compliance in terms of format and structure

In Table 1 below, the DBE Accounting papers that were analysed are presented.

**Table 1 - Format and structure of Accounting Examination Papers**

Exam paper	Focus area	Duration (hrs)	Mark allocation
<b>DBE 2013</b>	Financial Accounting Managerial Accounting Managing resources	3	300
<b>DBE 2014</b>	Financial Accounting Managerial Accounting Managing resources	3	300
<b>DBE 2015</b>	Financial Accounting Managerial Accounting Managing resources	3	300

All the DBE papers comply with the requirements as specified in the SAG (2013) and CAPS as they cover the scope of the grade 12 curriculum: Financial Accounting, Managerial Accounting and Managing resources

The DBE 2015, 2014 and 2013 papers comply with the examination requirements as set out by the CAPS with regard to the format and structure. The mark allocation (300 marks) and duration (3 hours) of the examination paper complies with the suggestions in the CAPS.

The CAPS does not stipulate the number of questions per paper and the mark allocation per question. However it is stipulated in the examination guidelines that questions may vary from 5 to 8 questions (Grade 12 Examination Guidelines, 2014: pg 4). Like other previous years' examination papers, the final DBE 2015 paper consists of 6 questions. All questions are compulsory and are to be answered in a specially prepared answer book.

According to the CAPS, all topics require integration of ethical issues and internal control. The team noted that in the DBE 2015 paper the integration of ethical issues in the questions was minimal at only 2 marks while internal control was integrated in all questions as suggested in the CAPS except Questions 4 and 6 and totaled 56 marks.

The DBE 2015 paper like the 2014 paper includes the new content as specified in the CAPS. Creditors Reconciliation was examined in Question 1. Repurchase (buy-back) of shares was examined in Questions 3 where the focus was on the repurchase (buy-back) of shares and its effect on the Balance sheet and notes. Other aspects related to the repurchase of shares were included in Statement of Cash Flow in Question 4 from the point of view of how a repurchase would affect the cash flow of a business.

Although all new content was covered adequately in the DBE 2015 final paper, this has led to double testing of repurchase of shares across namely in Questions 3 and 4. While this is not a desirable practice, the team believed that it was appropriate as

it was tested in different contexts. In Question 3 learners had to distinguish between the amount that was recorded in the share capital note i.e. the average price and the amount recorded in the retained income note i.e. the difference between the average price and the purchase price. In Question 4 the impact of the repurchase of shares on the cash flows was examined.

The CAPS specifies that approximately 10% of all Accounting examinations should address problem-solving questions (CAPS, pg. 44) where learners are required to use critical and creative thinking. The DBE 2013 paper included enough problem solving questions to meet the target at 10%. The DBE 2014 and 2015 papers are below the 10% target at 8% and 6% respectively.

Enough content stipulated in previous grades was tested explicitly in most of the questions in the DBE papers.

According to the CAPS, the target for content coverage is 50%-60% Financial Accounting; 20%-25% Managerial Accounting; 20%-25% Managing Resources.



**Table 2 - Comparison of the topic or content and/or skill weightings specified with the weightings for DBE 2013, 2014 and 2015 examination papers**

FOCUS / TOPIC AREA	2013		2014		2015	
FINANCIAL ACCOUNTING	Marks	%	Marks	%	Marks	%
<b>TARGET 50 – 60%</b>	<b>181</b>	<b>60%</b>	<b>151</b>	<b>50%</b>	<b>142</b>	<b>47%</b>
Companies	164		124		119	
Interpret reconciliations - bank, debtors, creditors, age-analysis	17		16		23	
VAT	0		11		0	
<b>MANAGERIAL ACCOUNTING</b>						
<b>TARGET 20 – 25%</b>	<b>59</b>	<b>20%</b>	<b>89</b>	<b>30%</b>	<b>76</b>	<b>25%</b>
Manufacturing concepts	8		0		0	
Production cost statement & notes	10		34		23	
Unit costs & break-even	7		15		12	
Cash budget - sole trader/company - analyse & interpret	34		40		41	
<b>MANAGING RESOURCES</b>						
<b>TARGET 20 – 25%</b>	<b>60</b>	<b>20%</b>	<b>60</b>	<b>20%</b>	<b>82</b>	<b>27%</b>
Interpret & report on movement of fixed assets	0		12		0	
Perpetual & periodic inventory systems	15		5		2	
Validate & calculation inventories - FIFO, Weighted average, Specific Identification.	10		15		22	
Professional bodies	6		0			
Internal control & internal audit processes	29		28		56	
Ethical behaviour	0		0		2	

In terms of the content coverage, the DBE 2015 and 2014 papers do not strictly comply with the target. In the 2015 paper Managing Resources is slightly over-represented at the expense of Financial Accounting while the 2014 paper focuses

more on Managerial Accounting. In the DBE 2013 there is a good match between the exam paper and the stipulated target in the examination guidelines.

The team noticed that although in the 2015 paper Managerial Accounting is within the target, the Cash Budget is the most heavily weighted topic. This was appropriate as a Company Cash Budget is one of the new topics in the CAPS.

### 1.1.2 Coverage of examinable curriculum

Of the 24 examinable topics in the grade 12 syllabus, below is the number of topics which were examined and the essential knowledge not examined in each paper the team analysed.

**Table 3 - Coverage of examinable curriculum for DBE 2013, 2014 & 2015.**

DBE exam papers	2013	2014	2015
<b>No. of Topics examined</b>	<b>16</b>	<b>13</b>	<b>12</b>
<b>Percentage examined</b>	<b>67%</b>	<b>54%</b>	<b>50%</b>
<b>Essential knowledge not examined</b>	<b>8</b>	<b>11</b>	<b>12</b>
-Selected ledger accounts – companies	X	X	X
-Concepts - GAAP & IFRS	X	X	X
-Accounting equation – companies		X	X
-Final accounts – companies	X	X	X
-Financial statements - IS – companies		X	
-Analysis and interpretation of published financial statements		X	X
-VAT	X		X
-Manufacturing concepts		X	x
-Short-form – manufacturing Income Statement & notes	X	X	X
-Interpretation and report on movements of fixed assets.	X		X
-Projected Income Statement	X	X	X
-Professional bodies and code of conduct		X	X
-Ethical behaviour	X	X	

From Table 3 above, more topics were examined in 2013 compared to 2014 and 2015. It is impossible for the examiner to examine all topics in the curriculum in the time allocated due to the fact that the duration of the Accounting paper is 3 hours and 300 marks. The examiners are therefore selective because the curriculum is too broad.

As the range of skills in Accounting progresses from understanding concepts, recording information to analysis, interpretation and evaluation of the financial information, the main topics that are always assessed integrate knowledge and skills from other topics within the grade

The following topics are usually not examined in the papers as stand-alone questions:

Ethical behaviour, company ledger accounts, GAAP concepts, Company Final accounts, Short form-manufacturing Income Statement & notes.

Company ledger accounts are not included in the examination paper because the assumption is that learners need knowledge and skills from ledger accounts to complete the financial statements and notes. In addition, Final Accounts are not examined with an Income Statement as the Income Statement is simply a logical format of these ledger accounts. They are normally assessed internally at school level in either formative and/or summative assessments

To avoid double testing the Projected Income Statement is not usually examined together with a Cash Budget Furthermore, if the Balance Sheet (Statement of Financial Position) is examined it is not usual for the Income Statement (Statement of Comprehensive income) to be examined.

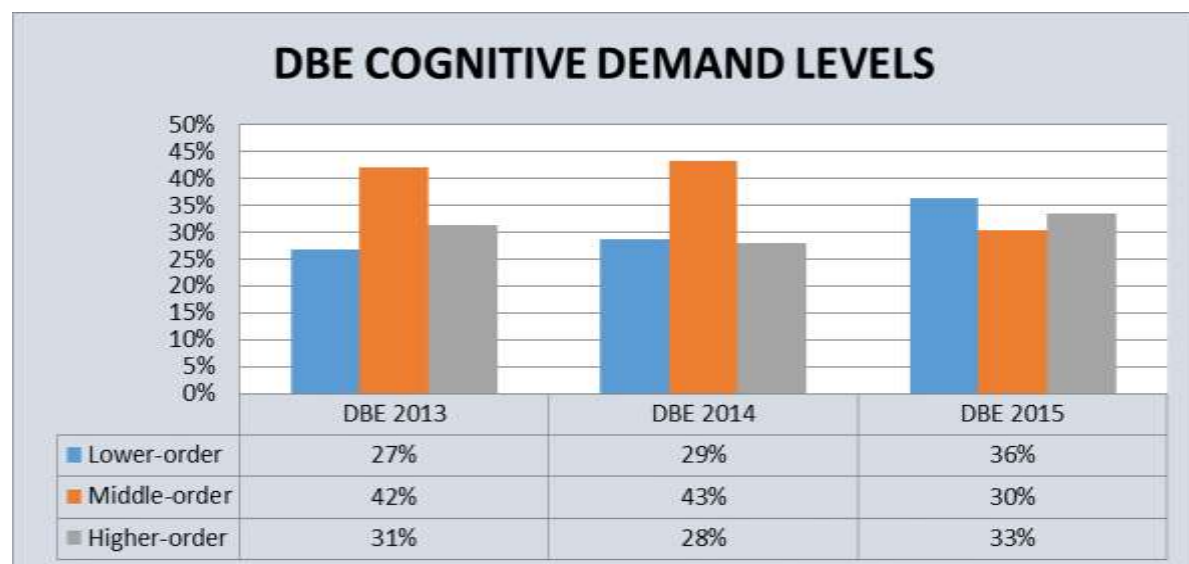
The main topics omitted in the DBE 2015 final paper were reporting on fixed assets and VAT (subtopic). The problem with VAT is that it is too small to be a stand-alone question and it does not integrate well with any other section. Interpretation and report on movement of fixed assets was implicitly asked in Question 4 where learners had to calculate the disposal of the fixed asset. The team feel this section could have been examined in a greater way as it is a stand-alone topic.

There were no questions in the exam paper analysed that were non-examinable.

### 1.1.3 Distribution of cognitive demand in the papers

With regard to addressing of cognitive levels, the CAPS stipulates a three-way split between Lower- Middle- and Higher-order cognitive levels in a 30%:40%:30%.

**Figure 1.1.1: Comparison of cognitive demand weightings in the DBE 2013, 2014 and 2015 papers**



From Graph 3.1.1 above, the DBE 2015 final paper does not conform to the required targets while 2013 and 2014 are fairly closer to the target. 2015 paper reflects more lower- order and higher-order questions at the expense of middle-order questions. For both 2013 and 2014 the middle-order questions are slightly higher than stipulated in CAPS.

All papers reflect a heavy focus on application level type of questions at 55%, 61% and 56% respectively. This is due to a heavy emphasis of application in the preparation of Bank reconciliation, Balance Sheet with notes, Cash Flow Statement, Cash Budgets and Production Cost Statement. Although all papers lean heavily towards application level, 45,8% of this level in 2015 is advanced application while in 2013 and 2014 papers are at 40%. Questions in this level involve more in-depth

processes where learners are asked to perform advanced accounting procedures and this was evident in five of the six questions in 2015 and in all six questions in 2014.

Although the 2015 paper reflects more lower-order questions, 29% of the paper was extremely challenging cognitively while 2013 and 2014 reflects 22% and 23% respectively. In this level learners were required to engage with financial information and to use their innovative and creative abilities to identify and provide solutions to various scenarios.

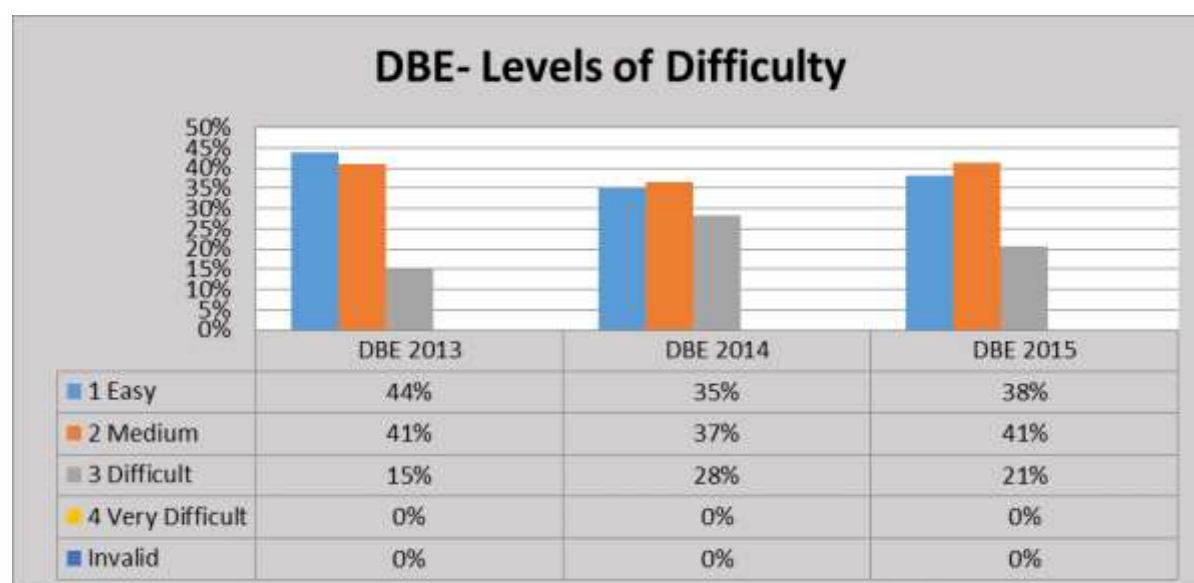
The 2015 paper does not fairly accommodate learners who have different levels of ability. However, there are enough marks allocated to lower order cognitive levels for the learners to attain at least 30%. In addition there are enough marks allocated to higher order cognitive levels which would challenge the brighter learners. Unfortunately the lack of middle order cognitive levels does not accommodate the average learner.

The DBE 2014 and 2013 papers accommodate learners who have different levels of ability. Although there are less marks allocated to lower order cognitive levels, more marks are allocated to the middle-order for the average learner.

#### **1.1.4 Distribution of levels of difficulty in the papers**

The DBE Exam Guidelines stipulates that all examinations in Accounting, must reflect sub-questions of differing degrees of challenge, i.e. Easy, Moderate and Difficult to ensure that question papers cater for the full range of abilities of learners.

**Figure 1.1.2: Comparison of difficulty level weightings in the DBE 2013, 2014 and 2015 paper**



The DBE 2013 paper is the least challenging with 44% easy questions and 15% difficult questions compared to the other papers. The DBE 2015 paper appears to be less balanced than 2014, with a higher % of easy questions at 38% and less difficult questions at 21%. Both 2013 and 2015 papers present enough medium questions for the average learner.

The DBE 2014 paper reflects less easy questions and more difficult questions compared to 2013 and 2015. The paper has enough marks to allow the weaker learner to attempt the question and achieve part marks. Weaker learners would find questions 4.3.1 and 5.2.2 in 2014 paper very difficult as the questions have no easy or medium components. The team felt that this is necessary to extend the top end learner.

### **1.1.5 Invalid sources of question difficulty or ease**

There were no questions that were assessed as having invalid sources of difficulty or of ease in the DBE 2013 and 2015 examination paper analysed.

In the DBE 2014 paper there were two minor invalid sources.

- In Question 1.3.4, the question was not specific in terms of what learners were required to answer. The word 'control' could have been replaced by the word 'loss' to guide learners (3 accuracy and 1 method mark totalling 4 marks).
- In Question 3, information B, the date for interim dividends paid falls outside the financial year under consideration. This would have an impact on the retained income closing balance and amounted to 1 accuracy mark, all the other marks affected by this were method marks.

#### **1.1.6 Difficulty of stimulus/source material**

The team identified stimulus that learners might consider difficult. In the DBE 2015 paper there were instances where learners might have had difficulty in responding because of the following reasons:

- Difficulty to interpret and understand information given
- Working backwards from given information in order to find the missing amounts
- A lot of background reading
- Unpack a large amount of information for their response
- Select relevant and appropriate information from dense contextual information

Table 4 – Examples of questions with difficult stimulus

Exam paper	Question	Justification for difficult stimulus
DBE 2013	5.2	Reverse calculation & reading.
	6.2.2	Format of information & integrated in context of valuation.
DBE 2014	4.3	Little direction in terms of what answer was expected from the learners.
DBE 2015	1	Information E Difficulty to interpret and understand information given
	2.1.3	Little direction in terms of what answer was expected from the learners.
	2	Incorrect date in the information given may have confused learners
	3.1.3	Reverse calculation

#### 1.1.7 Comparability of 2013 – 2015 examination papers

The following discussion regarding the comparison of examination standards is based on the information provided above and the data gathered in the spreadsheet.



**Table 5 – Comparing the different levels of difficulty and the cognitive demand weighting in the DBE examination papers.**

	LEVELS OF DIFFICULTY			LEVELS OF COGNITIVE DEMAND		
	1 E	2 M	3 D	L-O	M-O	H-O
<b>DBE 2013</b>	44%	41%	15%	27%	42%	31%
<b>DBE 2014</b>	35%	37%	28%	29%	43%	28%
<b>DBE 2015</b>	38%	41%	21%	36%	30%	33%

The DBE 2015 paper was more challenging cognitively than DBE 2013 and 2014. However DBE 2015 paper also reflects more questions on lower-order and fewer questions on middle-order at 31%. This means the paper accommodates the lower end and higher end learners but not the average learner. The DBE 2014 paper is considered to be fairly compliant with the required targets compared to other papers.

Both 2013 and 2015 papers reflected less difficult questions at 15% and 21% while DBE 2014 paper reflected less easy questions at 35%. Based on the levels of difficulty the DBE 2014 final paper is significantly more difficult than the DBE 2015 and DBE 2013 papers. This suggests that learners will experience the 2015 final paper as significantly less challenging than the 2014 paper. Hence the team believes that the overall performance in 2015 will improve when compared to the DBE 2014 results.

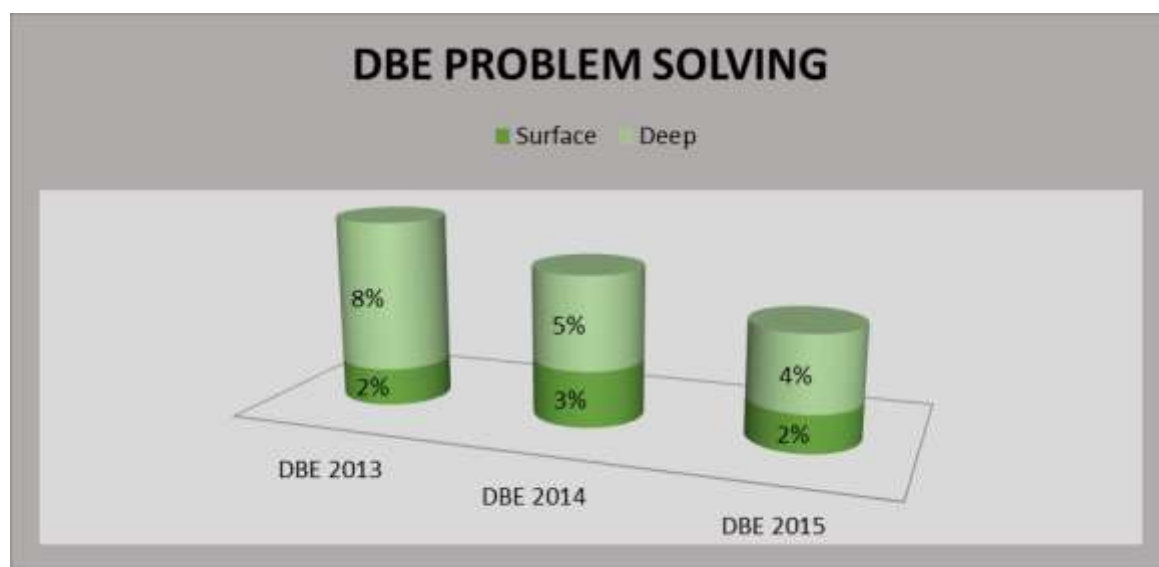
More learners at the bottom end of the scale will pass the 2015 paper compared to the 2014 paper and more A symbols will be achieved in 2015 due to the decrease in the degree of difficulty. It is believed that in 2015 the average learner will attain higher marks than in 2014 due to more easy and medium type questions (a total of 79% in 2015 compared to 72% in 2014) than in the 2014 paper.

### 1.1.8 Other points regarding the standard of the examination

#### Problem solving

According to the CAPS, approximately 10% of all examinations should address problem-solving questions of a deep and surface nature using critical and creative thinking. These problem-solving questions must also cover a range of cognitive skills (lower, middle and higher-order) to cater for all learners but within the context of backgrounds the learners come from. The inclusion of these types of questions allows learners to use their innovative and creative abilities and distinguishes between learners of different abilities.

**Figure 1.1.3 Comparison of problem solving questions for DBE 2013, 2014 and 2015 papers**



The DBE 2013 paper included enough problem solving questions to meet the target of 10% and these were predominantly of a deep nature. The papers reflected 8% of the total weighting on deep problem-solving questions. These questions came from question 2, 5 and 6. In these questions learners were asked to solve a real problem faced by the business.

The DBE 2014 paper is below the 10% target at 8%. Although 22% of the paper was extremely challenging cognitively, the paper reflected less questions on problem

solving compared to 2013. In order to address the issue of not meeting the target figure of 10%, more in-depth problem type questions need to be added for students to evaluate information and create solutions to solve problems.

The DBE 2015 paper is further below the 10% target at 6%. Of this 6%, 2% is at a level of surface problem solving and the other 4% represents deep problem solving. Problem solving aspects were integrated into Questions 1 and 5, with a total of 12 marks which is below the 10% of 30 marks.

The team is concerned that this paper reflects a low focus on problem solving questions, in contrast to 2014 and 2013. In the teams' view, a problem needs to be solved for it to fall into the problem solving category, not only identified by learners.

### **1.1.9 Concluding discussion**

1.1.9.1 In the DBE 2015 paper the team felt that the incorrect date was given in the information of Question 2 might cause confusion with the learners and prevent them from earning more marks.

1.1.9.2 Inconsistency in mark allocations for DBE 2015:

- Question 3.1.3 - the inventory amount was given, yet the memo awards 2 marks for this. In comparison to another amount that would need to be calculated but also awarded 2 marks.
- Similarly in Question 6.1 - in factory overhead costs, the 1 920 was given and the memo also awards this 2 marks.
- In the DBE 2014 paper the team was of the opinion that too much information was provided for the share capital note Question 3.1.1 and as a result this question became a pure calculation exercise and did not test the concepts and principles. We feel that this is much improved in the DBE 2015 paper.

1.1.9.3 Learners were disadvantage in Question 1 information E, as the stimulus was unclear and would prevent learners from identifying this as an outstanding deposit and lose the marks associated with this.

### 1.1.10 Recommendations for improving the quality and standard of Accounting examinations

- The curriculum needs to be updated on a more regular basis to reflect current practice: Terminology relating to financial statements e.g. **Balance Sheet** now called **Statement of Financial Position**.
- Ensure that the stimulus (background and information) provided is accurate and not confusing.
- The adequacy and accuracy of **marking memorandum** should be checked. Award method marks for calculation done and not just accuracy marks. Learners are unfairly penalised all the way through their answer when only accuracy marks are awarded and no consequential marks were given.
- The team is concerned about topics which are neglected in the exam papers as is seen by only 50% of the available topics being examined in 2015.

## 1.2 Business Studies

### 1.2.1 Compliance with CAPS and/or relevant assessment body

The format and structure of the DBE November 2015 paper complies with the requirements in the Business Studies Examination Guidelines for Grade 12 - 2014 document, suggesting a 3 hour paper of 300 marks divided into three sections: **Section A** (40 marks, 30 min) is compulsory and consists of 20 short questions; **Section B** (180 marks, 90 min) candidates choose any THREE questions in this section out of five questions. (60 marks x 3 questions) **Section C** (80 marks, 60 min) is a choice of TWO out of four essay questions (DBE, 2015: 2). **Section A** consists of objective type questions such as multiple-choice questions, words in brackets and matching items. **Section B** has FIVE direct/indirect type questions, candidates have to answer any THREE in this section. This section has direct questions encompassing scenarios, case studies and calculations or numerical presentation. **Section C** has FOUR essay type questions, candidates have the choice to answer any TWO questions of the four questions in this section (40 marks x 2, 60 min).

### 1.2.2 Coverage of examinable curriculum

The examination paper adequately covers all the essential examinable components of the curriculum. There are questions in connection with all the **FOUR (4) Main Topics** in sections A, B and C of the question paper. The Examination Guidelines (2014) informs the essential examinable components which are the four main topics i.e. Business Environments, Business Ventures, Business Roles and Business Operations. The weighting is 25% for each topic

**TABLE 1.1 Coverage of examinable curriculum**

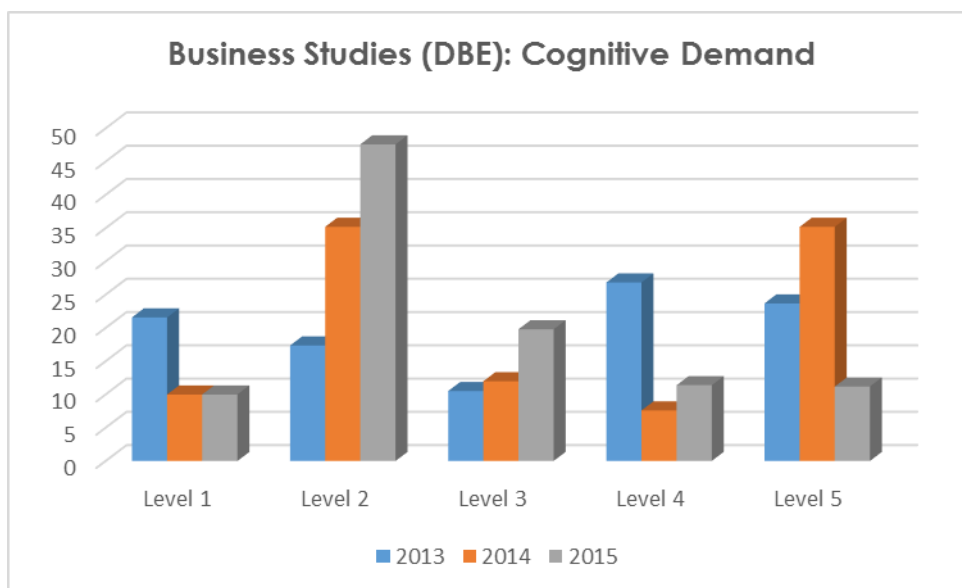
PAPER	LO 1/TOPIC 1 Business Environments	LO 2/TOPIC 2 Business Ventures	LO 3/TOPIC 3 Business Roles	LO 4/TOPIC 4 Business Operations	RATING
November 2013	29%	25%	21%	25%	100%

<b>November 2014</b>	<b>27%</b>	<b>27%</b>	<b>27%</b>	<b>19%</b>	<b>100%</b>
<b>November 2015</b>	<b>26%</b>	<b>31%</b>	<b>20%</b>	<b>23%</b>	<b>100%</b>

All examination papers were able to cover the broad spectrum of the examinable curriculum for Business Studies Grade 12 in all four main topics. All essential knowledge were covered in all these papers and examinable components were covered through different types of questions. According to the CAPS document all Four (4) Main topics should cover 25% of each topic. However, the analysis indicates that across all these years all the main topics felt short of meeting the maximum coverage of 25%. The analysis for November 2015 indicates that Business Environment is 26%, Business Ventures 31%, Business Roles 20% and Business Operations 23%.

### ***1.2.3 Distribution of Cognitive demand in the papers***

According to the team's analysis the DBE: Nov 2015 paper indicates cognitive demand levels categorised as knowledge and comprehension (L1 & 2) **58%**; application and analysis (L3 & 4) **31%**; synthesis and evaluation (L5 & 6) **11%**. Even though the paper deviate from the required weighting (i.e. L1 & 2 = 30%), L3 & 4 = 50%, and L5 & 6 = 20% according to the CAPS: 2011, 45). In this regard the paper cognitive demand weightings for knowledge and comprehension (i.e. L1 & L2) has increased by **28%**, for application and analysis (i.e. L3 & L4) has decreased by **19%**, and for synthesis and evaluation (i.e. L5 & L6) has decreased by **9%**. The analysis team can conclude by saying that the 2015 exam paper was not substantially inclined towards knowledge and comprehension, the paper was demanding mainly the basic thinking skills (e.g. factual recall, low-level application and low-level comprehension).



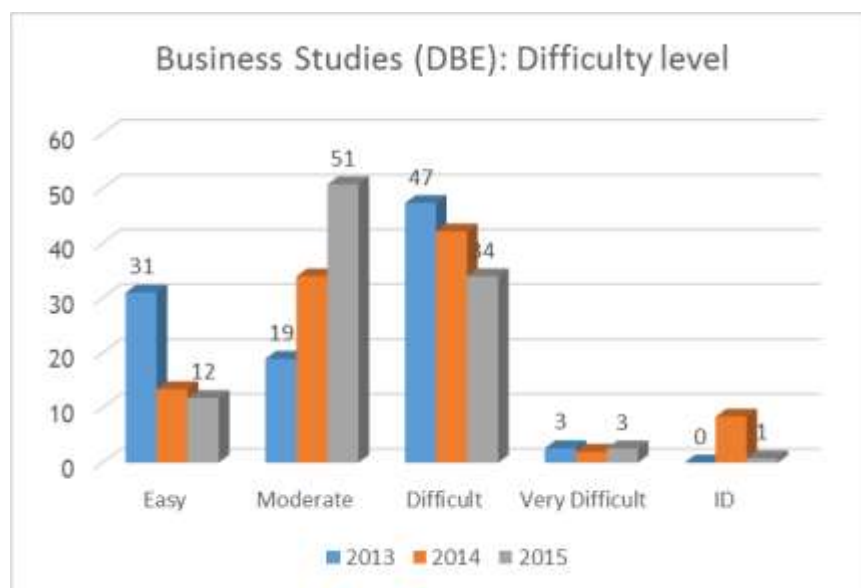
**Figure: 3.1.1 Comparison of cognitive demand weightings specified and percentages for the paper(s) analysed**

PAPER	Cognitive level		
	L1 & L2 Knowledge and Comprehension	L3 & L4 Application and Analysis	L5 & L6 Synthesis and Evaluation
DBE: Nov 2013	39%	37%	24%
DBE: Nov 2014	60%	15%	25%
DBE: Nov 2015	58%	31%	11%

#### **1.2.4 Distribution of levels of difficulty in the papers**

The level of difficulty for 2014: 12% easy questions; 32% moderate questions; 46% difficult; 2% very difficult and 8% invalid. According to the analysis team for the 2015 as equalled to 2014 there is a insignificant decrease of easy questions in 2015 (i.e. from 13% in 2014 – 12% in 2015). For moderate questions there is a significant increase (i.e. 17% sharp increase of moderate questions). Comparison of difficult questions there is a noteworthy fall of 2014 – 2015 (i.e. 8% decrease of difficult questions). For the very difficult questions there is insignificant changes (i.e. 1% from 2014 – 2015). Although there is an increase in the moderate level of questions by 17% in 2015 this is due to the frequency of conceptual knowledge (58%) question which is the highest in 2015. There is a decrease the level of difficult questions in 2015 with a margin of

12%. This is attributed to the low frequency of problem solving and evaluation questions at 11%. There is a slight increase of very difficult questions (1%) in 2015.



**Figure 1.1.2 Comparison of difficulty level weightings in the paper**

**Percentage of marks awarded to different levels of difficulty in examination papers**

Paper	Easy	Moderate	Difficult	Very difficult	Invalid
DBE: Nov 2013	24%	30%	44%	2%	
DBE: Nov 2014	12%	32%	46%	2%	8%
DBE: Nov 2015	12%	50%	34%	3%	1%

**1.2.5 Invalid sources of question difficulty or ease**

PAPER	DIFFICULTY	EASE
DBE: November 2013	2	
DBE: November 2014	32	
DBE: November 2015	1	



Explanation of invalid sources of difficulty according to the analysis of the team: For examination paper **DBE: 2013**

- Questions 3.5 and 4.3.2: The memorandum spells out an expectation to a slightly different question, not the actual question. Learners' responses may be marked wrong if they do not provide the answers in the memorandum.

For the **DBE: 2014 November examination paper**

- Question 2.1.3: relies on the answer to 2.1.2 can lead to follow-on-errors
- Question 2.1.4: Candidates are expected to select relevant and appropriate information from what they have learnt for their response
- Question 2.4.2 relies on the answer to 2.4.1 can lead to follow-on-errors
- Question 3.5.3: the question requires candidates to work through steps to arrive at an answer. It requires learners to use a high level of mathematical manipulation
- Question 3.5.4: the question requires candidates to work through steps to arrive at an answer. It requires learners to use a high level of mathematical manipulation
- Question 3.5.5: the question requires candidates to work through steps to arrive at an answer. It requires learners to use a high level of mathematical manipulation
- Question 3.5.5: the question requires candidates to work through steps to arrive at an answer. It requires learners to use a high level of mathematical manipulation
- Question 4.1.1: two operations are assessed. Candidates are expected to identify unethical business practices and suggest a business strategy
- Question 4.1.2: two operations are assessed. Candidates are expected to identify unethical business practices and suggest a business strategy
- Question 4.1.3: two operations are assessed. Candidates are expected to identify unethical business practices and suggest a business strategy
- Question 4.3: not stated in examination guideline. As distinguishing between grievance and conflict.
- Question 4.6.1: the memorandum spells expectations that are slightly different from the question. The memorandum refers to NGT (nominal group technique). The question is open but the memorandum response is closed.

- Question 4.6.1: the memorandum spells expectations that are slightly different from the question. The memorandum refers to NGT (nominal group technique). The question is open but the memorandum response is closed
- Question 4.6.2 relies on the answer to 4.6.1. Can lead to follow on errors
- Question 4. 7.3 the question is testing obscure unknown facts not mentioned in the examination guideline.
- Question 5.2.1: the question is phrased in a complex manner.
- Question 5.3.2: The cognitive verb used in "justify" pitches the question to a higher cognitive level. The same question can pitch at a different cognitive demand using different cognitive verbs.
- Question 5.3.3: The cognitive verb in the question "proposes". On the memorandum "placement procedures are merely listed.
- Question 5.3.4 (a): The cognitive verb in the question is "advise". On the memorandum "contents of the legal requirements" are merely listed.
- Question 5.3.4 (b): The cognitive verb in the question is "advise". On the memorandum "contents of the legal requirements" are merely listed.
- Question 6.1.2: the response to this question requires explanation of complex ideas which makes the question difficult.
- Question 6.5: the memorandum spells out expectations that are slightly different from the question. The memorandum refers to advantages and disadvantages.
- Question 6.6: the memorandum spells out expectations that are slightly different from the question. The memorandum refers to advantages and disadvantages.
- Question 7.2: the memorandum spells out expectations that are slightly different from the question. The memorandum refers to advantages and disadvantages.
- Question 7.3: The question requires complex ideas.
- Question 8.2: The question assesses advanced content which tests candidates' content of theoretical issues and they have to apply to a particular context.

- Question 9.2: The memorandum spells out expectations that are slightly different from the question. The memorandum refers to advantages and disadvantages.
- Question 9.3: The question assesses advanced content which tests candidates' content of theoretical issues and they have to apply to a particular context.
- Question 9.4: The question requires candidates to assess inferential application of knowledge or that requires students to take ideas from one context and use it in another.
- Question 10.1: The question requires candidates to unpack a large amount of information for their response. The presentation of this question is in a dense form where too many points are packed in the question.
- Question 10.2: the memorandum spells out expectation that is slightly different to the question. The memorandum focusses on the impact.
- Question 10.3: This question requires candidates to assess inferential application of knowledge or that require candidates to take ideas from one context and

For the **DBE: 2015 November examination paper**

According to the analysis team only one (1) question has an invalid source of difficulty **Question 7: Section C**. In this question the invalid source of difficulty is instigated by the task expected from the candidates to perform, the question has three operations that are assessed and candidates are expected to Apply the Pestle model, Identify and Discuss.

### **1.2.6 Difficulty of stimulus/source material analysed**

<b>Paper</b>	<b>EASY</b>	<b>MODERATELY CHALLENGING</b>	<b>DIFFICULT</b>
DBE: Nov 2013	6	1	
DBE: Nov 2014	7	1	1
DBE: Nov 2015	11	2	1

These number of stimulus or source material referred to above are drawn from the case studies used in the examination paper. The language used for easy sources is simple for an average learner and the length of stimulus source is not condense. The moderately challenging scenario given is moderate for both the 80% learners and the 30% average learner, is moderate because language used is accessible, however, the understanding of the case study in relation to answering

Question 6.5 has a difficult stimulus because the question requires candidates to unpack a large amount of information for their response. The presentation of this question is in a dense form where too many points are packed in the question. The DBE November 2015 has 13 case studies and the rest were easy and simple for an average 30% average learners (e.g. Question 2.5; 2.7; 3.1; 3.5; 3.6; 4.6; 4.7; 5.3; 5.6; 6.1; 6.2; 7; 8; 9; and 10.

### **1.2.7 Comparability of 2013 – 2015 examination papers**

<b>PAPER</b>	<b>RATINGS</b>
DBE : November 2013	Good
DBE: November 2014	Good
DBE: November 2015	Good

The previous DBE examination papers, the 2013, including the November 2014 were rated Good in all respects. The November 2014 paper, gave candidates a choice from five questions in Section B. Four questions are concentrated on a particular Main topic and one question is miscellaneous topics. We would therefore rate the quality as better than the previous year's papers (i.e. 2012 and 2013). The November 2015 paper was up to standard and it was also divided into the FOUR MAIN topics of Business Studies. The 2015 exam paper comprise of Section A with objective-type questions and this section is compulsory, Section B include five direct/indirect type questions and candidate answers any three of the five questions in this section, this section has miscellaneous topics question divided into four main topics. The 2015 Nov paper Section B questions had standardized levels of difficulty as equaled to 2014 which enabled learners not to be disadvantaged or advantaged in their choices. Section C is made up of four questions of which candidates are expected

to answer any two of the four questions in this sections and these are essay type questions.

### ***1.2.8 Other points regarding the standard of the examination***

Generally the DBE Nov 2015 question paper was to some extent a moderate paper, this informed by the percentage of comparison of difficulty level weightings in the examination paper and/or distribution of levels of difficulty. The paper effectively included all the levels of cognitive demands but marginally upsurge towards moderate questions. However, there is room for improvement. The standard of examination in terms of choice of questions that candidate could choose for 2015 examination paper candidates have choice from Section B (e.g. FIVE direct/indirect type questions – Choice of Three questions). The Four questions are based on Four Main Topics and One on miscellaneous questions. For Section C (e.g. FOUR essay-type questions- Choice of any Two questions) these questions are based on all four main topics.

### ***1.2.9 Recommendations for improving the quality and standard of the examinations***

The analysis team is proposing the following:

- That DBE Business Studies should consider **Paper 1 and Paper 2**, because the amount of work in the current format is having an impact on the standard of the examination
- For Paper 1 we recommend that it should have Section A and B, Section B will have Five questions and candidates could choose any Three questions. A separate paper will allow a sufficient reading time, when choosing questions.
- That papers should have weightings of cognitive demand and level of difficulty in accordance with the norm as specified in the CAPS, 2011: 45
- That Paper 2 should have Four questions and candidates could have a choice of Two.

- That language should be toned down and made more accessible for the 30% average learner, the examiners should be careful about construction of cognitive verbs used.
- Questions from the exam guideline must be “directly” in the content of the exam guideline. An example of an indirect content is. Question 4.4
- Testing using “Follow-up” questions need to be reconsidered in terms of difficulty for the learner as well as losing marks if the first answer is incorrect.
- Questions set from the content “recap” from grade 10 and 11 could be challenging in terms of the weighting of the “recap” content (all content is examinable).

#### **1.2.10 Good model for future examinations (use)**

- Most questions in the DBE: November 2015 can be used in future and all FOUR main topics are covered in all sections.
- The layout of the paper in section b including the miscellaneous topics and section c according to the main topics assisted learners.
- The technical layout in encasing scenarios demarcated the questions from the scenario.
- The format of the DBE: November 2015 is a good model for future use especially section B that consists of five questions of which learners must answer three. It gives learners a good chance to pass the examination.

## **1.3 Economics**

### **1.3.1 Introduction**

This Post-exam analysis report presents the findings of the team of evaluators for the subject Economics in the Further Education and Training phase of the CAPS curriculum. At the outset, the team had a discussion and review of the instrument and its application in an attempt to maintain consistency with the instruments application in the previous years. Each team member had analysed each examination paper independently prior to the group analysis. Each question paper was then analysed as a group. A careful scrutiny of the examination question papers as well as the marking memoranda was undertaken. The team engaged an item by item interrogation. Each item was carefully evaluated and notes were made with regard to ambiguity and prejudice. Of particular importance was the focus on cognitive demand, level of difficulty, as well instances of invalid difficulty. The marking memorandum provided was also used to inform the analysis and classification of each question. There were instances where team members disagreed on the classification of certain questions. The team leader allowed members to argue/deliberate, requesting clear justification for the claims they had made about certain questions. These deliberations provided useful insights as to how different questions might be interpreted by learners. In many cases the marking memorandum provided evidence of the cognitive level that was being assessed.

### **1.3.2 Compliance with the CAPS and/or relevant assessment body.**

The DBE papers 1 and 2 for 2015 comply with the structure and format as suggested in the CAPS. The format and structure are in order. Note that candidates are given a further 30minutes more per paper in 2015.

### **1.3.3 Cognitive demand and weightings**

In table 2 below a comparison of the cognitive demand weightings of the 2015 papers and the specifications of the CAPs is presented.

**Table 2: Comparison of cognitive demand weightings**

<b>Cognitive demand</b>	<b>CAPS %</b>	<b>DBE 2015 P1</b>	<b>DBE 2015 P2</b>	<b>DBE Combined 2015</b>
<b>L1 and L 2</b>	30%	89%	89%	<b>89%</b>
<b>L3 and L4</b>	40 %	3%	11%	<b>7%</b>
<b>L5 and L 6</b>	30 %	8%	0%	<b>4%</b>

From the above table it can be seen that the percentage distribution of questions across the cognitive levels is a marked deviation from the prescribed expectations of the CAPS for both the DBE papers. While the CAPS prescribes a 30:40:30 proportional distribution of L1&2:L3&4:L5&6, the analysis indicates a disturbing deviation from the expected norms. The 2015 DBE (P1&P2 combined ratio) shows a distribution of 89:7:4. There is an unacceptably high loading of questions in the level 1&2 cognitive category at the expense of the other two levels. Levels 3&4 are under-represented by 33% while Level 5&6 is under-represented by 26%. The conclusion then is that the standard of the papers is well below that which the CAPS prescribes with almost 90% of the paper pitched at L1&L2.

### **1.3.4 Topic or content and/or skills area weightings**

In the table below, the topic weightings are provided. The economics curriculum is divided equally into 4 broad topic areas with each topic area allocated 25% of the total.

**Table 3: Comparison of the topic or content and/or skill weightings specified with the weightings for the examination paper(s)**

<b>Topic/Content</b>	<b>CAPS %</b>	<b>2015 DBE P1</b>	<b>2015 DBE P2</b>	<b>2015 DBE Combined</b>
<b>Macro Economics</b>	<b>25%</b>	60%	0	<b>30%</b>
<b>Micro Economics</b>	<b>25 %</b>	0	50%	<b>25%</b>
<b>Economic Pursuits</b>	<b>25 %</b>	40%	0	<b>20%</b>
<b>Contemporary Economic Issues</b>	<b>25%</b>	0%	50%	<b>25%</b>



The distribution of questions in the combined DBE papers across the four major topic areas in the economics curriculum indicates that Macro Economics was over-represented by 5% at the expense of Economic Pursuits. The team is of the view that this would not have disadvantaged the learners in any significant way.

### 1.3.5 Coverage of examinable curriculum

Table 4 presents data on the coverage of examinable curriculum in each paper.

<b>Examination papers</b>	<b>100% coverage</b>	<b>90-100%</b>	<b>80-89%</b>	<b>70-79%</b>	<b>Under 70%</b>
DBE November 2015 Paper 1		X			
DBE November 2015 Paper 2		X			

The DBE papers covered over 90% of the curriculum.

### 1.3.6 Invalid sources of question difficulty

**Table 5: Number of questions assessed as having invalid sources of difficulty of ease.**

<b>Paper</b>	<b>Number of Questions</b>	<b>Reason for Invalid sources</b>
DBE Paper 1	3	<p>3.1.2. Mark allocation inappropriate (too low for the manner in which the question is phrased)</p> <p>3.4. For this question, only 8 marks are allocated for what appears to be a long expected response. The question could have specified 1/2 SEZs that the candidates could have focused on</p> <p>4.3.3. The use of the word correlation is inappropriate as it suggests an answer that is different from what is</p>

		presented in the memorandum
DBE Paper 2	5	<p>3.1.2. Mark allocation is inappropriate – too few</p> <p>3.2.3. Mark allocation is inappropriate – too few</p> <p>3.2.4. Mark allocation is inappropriate – too few</p> <p>4.5. This question was poorly phrased and ambiguous. The word 'responsible' is unsuitable/inaccurate in this question.</p> <p>2.4. The question ought to have highlighted the specific concepts (in bold or italics) "Number of businesses" and "nature of product" so as to provide focus on what is to be explained.</p>

There are several instances cited in the table where the mark allocation is inappropriate to the type of question asked. Such questions require longer explanations than the mark allocation suggests and may result in learners spending more time than is necessary on these questions.

### 1.3.7 Other points regarding the quality of the examination

In table 6 below, examples of good questions/models are presented.

Name of paper	Questions
DBE Exemplar P1	2.2.1, 2.5, 4.3.2, 4.4
DBE Exemplar P2	1.1.3, 2.1.2, 2.3, 4.2.

### 1.3.8 Rating the quality of the examination papers

Table 7 presents the team's ratings of the quality of the examination papers.

Paper	Rating of examination paper
DBE 2015 P1	Satisfactory
DBE 2015 P2	Satisfactory

While the team is of the view that the quality of the examination papers are improving from year to year, there are still several areas that need to be considered as detailed above.

### 1.3.9 Standard of the examinations

Table 8 below presents the levels of difficulty of the examination papers under study.

	LEVELS OF DIFFICULTY			
PAPER	L1	L2	L3	L4
DBE 2015 P1	31%	43%	21%	5%
DBE 2015 P2	39%	42%	19%	0%
<b>DBE COMBINED P1&amp;P2 2015</b>	<b>35%</b>	<b>42.5%</b>	<b>20%</b>	<b>2.5%</b>
DBE COMBINED P1&P2 2014	25%	52%	18%	5%
DBE 2013	31%	28%	29%	12%
DBE 2012	33%	31%	36%	0%

The Combined 2015 DBE (P1 & P2) has a 35%, 42%, 20% and 2.5% spread of questions across Difficulty Levels 1, 2, 3 and 4 respectively. The team is of the view that the very difficult category is under-represented and should be between 10 and 15% of the total paper. This is important to distinguish the high achievers.

In comparison to previous years, Difficulty level 4 has dropped from 12% in 2013 to 5% in 2014 to 2.5% in 2015. Difficulty level 3 has dropped from 36% in 2012 to 29% in 2013 to 18% in 2014. It has increased marginally to 20% in 2015.

Difficulty level 2 has dropped to 42.5% from an inflated 52% in 2014. It was at 28% and 31% in 2013 and 2012 respectively. Difficulty level 1 has increased from 25% to 35% from 2014 to 2015. It was at 33% and 31% in 2012 and 2013 respectively. Below average learners (30% candidates) are likely to perform better in the 2015 examinations than in the 2014 examination. The 2015 paper is highly inadequate in terms of distinguishing the high achievers (80% candidates).

### Optional questions

Table 9: Comparison of Marks for Levels of Difficulty in optional questions in Section B and Section C for 2015 DBE P1

DBE 2015 P1	DL 1	DL 2	DL 3	DL 4	Total
<b>Section B</b>					
<b>Question 2</b>	16	24	0	0	40
<b>Question 3</b>	12	20	8	0	40
<b>Question 4</b>	16	24	0	0	40
<b>Section C</b>					
<b>Question 5</b>	0	30	10	0	40
<b>Question 6</b>	0	0	30	10	40

In Section B of P1, learners can choose two out of three questions. The distribution of questions across difficulty level 1 is fairly comparable for these three optional questions, ranging from 12 to 16 marks.

Difficulty level 2 is comparable across all three choice questions.

All questions have no marks at difficulty level 4. Questions 2 and 4 have no marks at Difficulty level 3.

There is thus a level of unevenness in the levels of difficulty across optional questions.

In Section C, learners choose one out of two questions. The difficulty loading is uneven with Q5 having 30 marks at Level 2 while Question 6 had no questions at this level. Question 5 had 10 marks at Level 3 while Question 6 had 30 marks pitched at Level 3. In the highest difficulty level (DL4) Question 6 had 10 marks at this level while Question five had none.

In essence the choice questions were significantly uneven in terms of level of difficulty.

Table 10: Comparison of Marks for Levels of Difficulty in optional questions in Section B and Section C of paper P2

DBE 2014 P2	DL 1	DL 2	DL 3	DL 4	Total
<b>Section C</b>					
<b>Question 2</b>	26	14	0	0	40
<b>Question 3</b>	22	18	0	0	40
<b>Question 4</b>	12	20	8	0	40
<b>Section C</b>					
<b>Question 5</b>	0	30	10	0	40
<b>Question 6</b>	0	0	30	10	40

In Section C of P2, learners choose two out of three questions. Marks allocated to questions at difficulty level 1 are comparable for Question 2 and 3 but not for Question 4.

For difficulty level 2, there is a degree of unevenness with Q2 at 14 marks, Q3 at 18 marks and Q4 at 20 marks. Difficulty level 3 was only tested in 4 (8 marks). No questions were set at difficulty level 4 in all three choice questions.

There was clearly unevenness in the difficulty levels being tested in this section.

In Section C, learners are expected to choose one out of two questions. Q5 has 30 marks at L2 and 10 at L3. Q6 has 30 marks at L3 and none at L2, but 10marks at Level 4.

This is also a section in which there is unevenness in the choice questions.

### Typical questions at different difficulty levels

Table 11 below presents examples of questions at the four difficulty levels:

Levels of difficulty	DBE Paper 1	DBE Paper 2
<b>Easy</b>	1.1.8	1,1,2

	2.1.1. 4.3.1.	3.3.2 4.2.2
<b>Moderate</b>	2.4. 3.2.4. 4.4.	2.1.2 2.3.4 4.2.3 4.4
<b>Difficulty</b>	3.5. 4.2.5. 5	5.2 6.1
<b>Very difficult</b>	6.2.	

### 1.3.10 Difficulty of stimulus/source material

Table 12: Number of stimulus/source material analysed as easy, moderately challenging and difficult.

Name of paper	Difficulty of stimulus material				
	Easy	Moderately difficult	Difficult	Very difficult	Total
<b>DBE 2015 P1</b>	5	1	0	0	6
<b>DBE 2015 P2</b>	4	2	0	0	6

DBE P1 contains 6 stimulus pieces, 5 of which were deemed easy and 1 moderately difficult. Learners would not have experienced any serious challenge in making sense of the stimulus material. Paper 2 had 6 pieces, 4 of which were deemed easy and 2 moderately difficult.

### 1.3.11 Recommendations for improving the quality and standard of the examinations

Recommendations for improving the quality of the examinations:

- Invalid sources of difficulty were present in the papers of both examining authorities. The combined DBE papers had 11 instances of invalid difficulty. The specific explanation for each of these was tabled in section 2 above.

- Uneven cognitive demand and levels of difficulty across choice questions is a recurring feature in both the DBE examination papers. Examiners need to pay particular attention to this aspect in future papers if they want to continue to set optional/choice questions.

### **1.3.12 Recommendations for improving the standard of the examination**

- The cognitive demand distribution of the papers reflect a heavy loading at cognitive levels 1 & 2 (over 89%) and a weak loading at levels 4&5 and 5&6 (under 10%). The testing of high level cognitive demand is clearly a neglected aspect in all papers, and as such does not provide a sufficient scope of questions that will distinguish high achieving students.
- The distribution across the levels of difficulty for the combined DBE papers indicates that 77% of the papers comprise easy and moderately difficult questions.
- Only 2.5% of the DBE examination questions were categorised as very difficult for the average grade 12 learner and 20% at Level 3 difficulty.
- Questions in the higher levels of difficulty are clearly under-represented. The consequence of this is that the papers are unable to effectively distinguish high achieving learners. Examiners have to pay attention to this crucial aspect of the papers.
- While the team feel that the quality and standard of the examination papers are improving marginally each year, the current papers are not good models for future examinations for the reasons cited above. The DBE examination papers could avoid the annual challenge of evenness in optional/choice questions by not offering any choices, a structural change (as is the case in the IEB paper). This will also avoid time wasting by learners as they deliberate/decide on which questions to choose and the possibility of learners attempting ALL questions hoping that the markers will choose the best answered questions.
- Arguably the strongest critique of the DBE papers is that there are insufficient questions that test actual **economic knowledge and economic principles and their application.** There are in fact several questions in these papers that tested 'everyday knowledge' which non-economics students could easily have answered. Examples of these are Q1.1.4, 2.2.1, 2.2.4, 3.2, 3.3, 4.2.

### 1.3.13 Comparability of overall quality of the examination papers

Table 13: Comparability of overall quality of 2014 examinations relative to other exams

Paper	Much worse	Worse than	Equivalent to	Better than	Much better
DBE 2012				x	
DBE 2013			X		
DBE 2014		x			
DBE 2015			X		

The team struggled to make this judgement as there were strong and weak aspects of all the papers. The view of the team was that the DBE 2015 paper was comparable to the DBE 2014, 2013 and 2012 papers.

### 1.3.14 Comparison of Cognitive Demand distribution across all papers under review

The table below provides comparative data for all papers.

Table 14: Comparison of cognitive demand across all examinations under review

PAPERS	LEVELS OF COGNITIVE DEMAND		
	CL1&CL2	CL3 & CL4	CL5 &CL6
DBE 2012	89%	7%	4%
DBE 2013	69%	17%	14%
COMBINED 2014 P1&P2	57%	36%	7%
COMBINED 2015 P1&P2	89%	7%	4%

All papers appear to be loaded at cognitive levels 1 & 2. The DBE 2015 papers are under-loaded at cognitive levels 3&4 and 5&6. Cognitive levels 1&2 is 59% higher than the DBE guidelines while cognitive levels 3&4 and 5&6 are severely under-represented.



There appears to be an alarming trend in the direction of loading the paper with low cognitive level questions.

### 1.3.15 Comparing levels of difficulty for each examination paper.

Table 15: Comparing levels of difficulty of all examination papers.

	<b>LEVELS OF DIFFICULTY</b>			
<b>PAPER</b>	<b>L1</b>	<b>L2</b>	<b>L3</b>	<b>L4</b>
DBE 2012	33%	31%	36%	0%
DBE 2013	31%	28%	29%	12%
DBE 2014 COMBINED P1&P2	25%	52%	18%	5%
DBE 2015 COMBINED P1&P2	35%	42.5%	20%	2.5%

In terms of the distribution of questions across the levels of difficulty, the data indicates the DBE 2015 comprises 10% more questions at Difficulty Level 1 which stands at 38% - a level that is acceptable. Combined P1 & P2 still remains heavily loaded at difficulty level 2 (moderately difficult), as in 2014. Difficulty level 3 has increased marginally to an acceptable 20%. Questions at the Level 4 have been most disappointing, reflecting an unhealthy declining trend to a low 2.5% in 2015.

From the data in the two tables above, a distinct finding is that the number of questions that distinguish the 80% candidates have decreased. The inference from this is that (*ceteris paribus*) there is likely to be an increase in the number of candidates at the top end (80+% candidates).

Below average learners (under 30%) candidates are likely to be better off in 2015 than the 2014 candidates.

## 1.4 Geography

### 1.4.1 Compliance in terms of format and structure

In all three years, the examination as a whole and both papers comply with the specified format and structure of the CAPs, and the assessment body.

### 1.4.2 Coverage of examinable curriculum

In all three years, questions were set on all the major curriculum topics; at least three quarters of the subtopics were covered across the two papers. There were no major gaps, nor was any non-examinable content included.

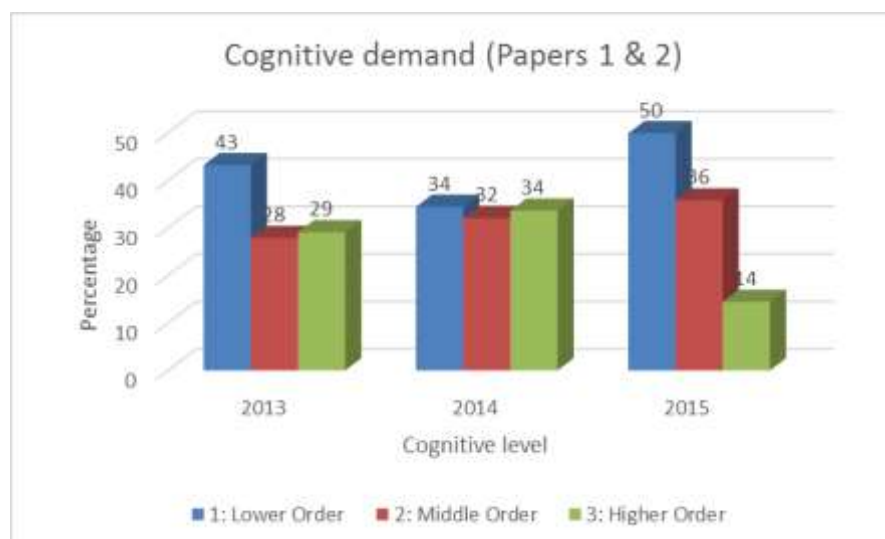
### 1.4.3 Distribution of cognitive demand in the papers

The CAPs has three levels of cognitive demand, weighted as shown below:

- Low order (Knowledge/Remembering: 25%
- Middle order: Understanding/Applying) 50%
- High order: (Analysing, Evaluating, Creating) 25 %

The weighting of cognitive demand across these levels in the DBE 2013, 2014 and 2015 papers is shown in Figure 3.1.1.

**Figure 1.3.1: Comparison of cognitive demand weightings in the paper(s)**



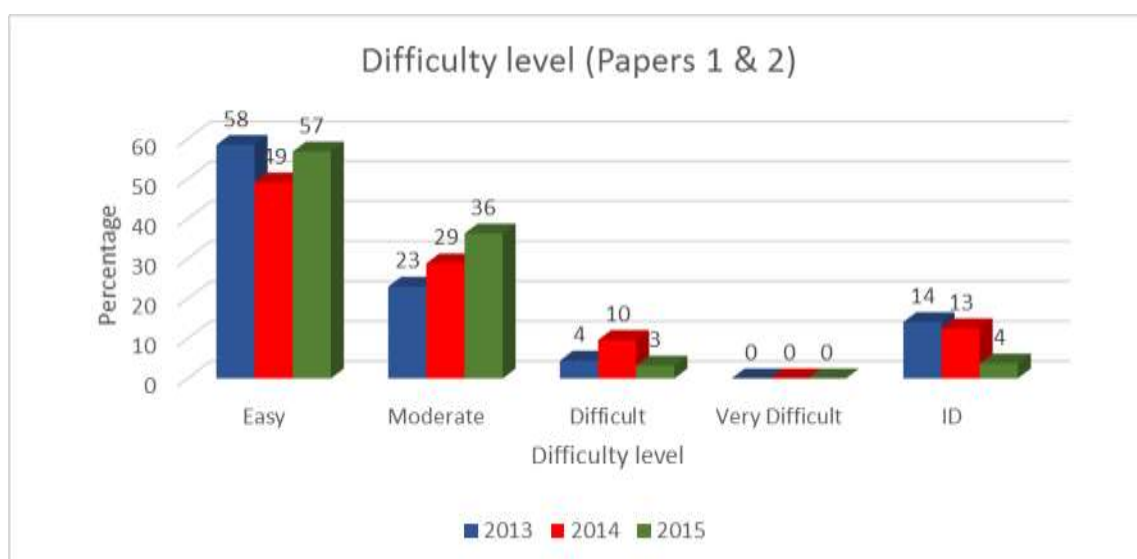
The graph shows that:

- **For the lowest order:** all papers are more heavily weighted than they should be (2013: 43%; 2014: 34%; and 2015: 50% respectively instead of 25%). The overweighting in this level is most noticeable in 2015.
- **For the middle order:** the weighting is lower than the required 50%; with values ranging from 28% (2013) to 32% (2014) and 36% (2015). This shows an upward trend in weighting in this level.
- **For the highest order:** the weighting over the three years has decreased noticeably from being too high in 2013 (29%) and 2014 (34%) in 2014 to being too low in 2015 (14%).

#### **1.4.4 Distribution of levels of difficulty in the papers**

Neither the CAPS nor the assessment body have any specifications for the distribution of marks across levels of difficulty, and so the papers cannot be compared with these. Figure 3.1.2 shows compares the weighting of marks across the levels of difficulty in the 2013, 2014 and 2015 examinations.

**Figure 1.3.2: Comparison of difficulty level weightings in the paper(s)**



All three examinations are most weighted in the easy category, with 58% (2013), 49% (2014) and 57% (2015) of the marks being awarded for questions the team considered to be easy.

There is an upward trend from 2013 to 2014 and 2015 in the moderately difficult category with regards to marks awarded for questions in this category. (23% in 2013, 29% in 2014, and 36% in 2015).

The weightings in the difficult category have varied over the three years, (4%, 10%, 4%) with the 2015 paper the same as that of the 2013 paper and lower than that of 2014.

The team believes the weightings across levels of difficulty should be as follows:

Easy: 35 % as this allows even weak candidates a chance of passing at the pass mark of 30%.

Moderately difficult: 40% as this would allow for candidates worthy of a C or a B to achieve these grades.

Difficult: 20% - achievable by candidates worthy of a distinction

Very difficult: 5% for the high-end achievers in the distinction category.

In the light of this it is the team's view that for all examinations analysed, the marks are far too heavily weighted in the easy category; there are too few marks in the moderately difficult category; and for all paper there are too few marks in the difficult category.

Given the comparative weightings in the easy category, the team believes that weak candidates' performance will be similar to that of weak candidates in 2013 and better than that of weak candidates in 2014 as the percentage of marks in the easy category is very similar in 2013 and 2015 (58%; 57%) and 7% and 8% higher in these years than in 2014. Average learners are likely to do better in 2015 than in previous years as the weighting of marks in the moderate category is higher this year than in previous years. As only 4% of the marks are in the difficult category it is like that strong candidates will do better in 2015 than in previous years, especially when the percentages for unintended difficulty are considered (14%: 2013; 13%: 2014; and 2%: 2015). With unintended difficulty considered, candidates would have perceived 18% of the paper (2013), 24% of the paper (2014), and 7% of the paper (2015) to be difficult.

#### **1.4.5 Invalid sources of question difficulty or ease**

Two questions in paper 1 and one question in paper 2 were considered to be invalidly difficult. Together, the marks for these contributed only 2% of the marks for the examination as a whole. They are thus unlikely to have a major impact on candidates' performance. There has been a noticeable decrease from 2013 and 2014 to 2015 in the number of questions and proportion of marks for questions the team thought to be invalidly difficult - a positive trend, and one which will advantage top candidates. .

#### **1.4.6 Difficulty of stimulus/source material**

The Geography team did not evaluate the stimulus/source material separately with regard to level of difficulty of stimulus material. The difficulty of the stimulus material was considered as part of the assessment of the difficulty of the question – particularly with regard to the construct 'stimulus difficulty' and the nature of the stimulus material was also considered in analysing the cognitive demand of the papers.

The team felt that overall the stimulus material was appropriate for grade 12 learners, though there was little to really challenge more able candidates. Graphs, for instance, were simple and easy to read (for example, figures 3.3 and 4.2 of Paper 1 are simple line graphs and pie diagrams respectively). The quantity seemed appropriate, and unlikely to have overwhelmed candidates.

#### **1.4.7 Comparability of 2013 – 2015 examination papers**

The analysis of levels of difficulty given above suggests that in regard to this criterion, the 2015 examination was of a higher standard than that of the 2013 or 2104 examination. The 2015 examination papers are also of a higher standard with regard to the number of questions considered to be invalidly difficult.

#### **1.4.8 Other points regarding the standard of the examination**

Some general points regarding the 2015 examination are given below<sup>1</sup>.

- There were some good examples of different questions from those usually set, or which integrated different aspects of work, or were interesting in some other way:
  - Paper 1: Questions 1.6.4; Q2.2.2;
  - Paper 2: Questions 1.11; Q1.15; 2.4.3 and Q3.2
- The team felt that Paper 2 this year was a particularly good paper in that it required learners to engage with the map and orthophoto in order to answer the questions – they could not rely on knowledge of theory alone. In addition, there was a lovely integration of map and orthophoto skills.
- The provision of a separate booklet of stimulus material facilitated access to the various resources to which candidates were referred.
- Quality of the diagrams. Although overall the quality of the diagrams was acceptable, there were some in Paper 1 where this was felt not to be the case: Questions 1.2.4, 1.2.6; 1.3.4 and 1.4.1. In some cases, the questions based on a diagram could be answered as easily without the diagram (1.1.1; 1.2.1)
- Language: There were some instances where the team felt that the language was not sharp enough, or the question was generally poorly phrased. Examples include:
  - Paper 1, Questions 1.2.1; 1.3.4; 2.1.1; 2.1.4; 2.5.5; 2.6.1; 2.6.2;

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<sup>1</sup> More detailed information pertaining to the examples given here can be found in the comments related to the questions noted in the analysis spreadsheet.

- Answers in the memo:
  - The team felt that in some cases the memo answered a different question to the one set, was incorrect or that the given answer was too restricted: Examples include:
    - Paper 1: Q 1.1.5; 1.2.4; 1.3.3; 1.4.1; 2.4.2; 2.6.4; 3.5.6; 4.4.5; 4.5.6
    - Paper 2: Q1.6; 1.7; 2.3; 2.4.3; 3.3
  - In some cases, the questions appeared to be asking for a higher order response that the memo indicated was in fact required. Examples include:
    - Paper 1 Q 1.5.1.c; 1.5.2.b; 1.5.2 c; 2.1.5; 2. 4. 3; 2.5.2; 2.6.4; 4.6.2
- Question 4.3.3 on Paper 2 seemed a problematic question – the latitude is incorrect on the sketch; too time consuming for the marks allocated. Might have been better to scrap this question and allocate the 2 marks elsewhere, or ask candidates to give spatial position of an give an easily identifiable location such as the centre of the hexagon

#### **1.4.9 Concluding discussion**

- 1.4.9.1 As noted above, there were some questions where poor formulation of the question could have disadvantaged learners, or where a graphic was poor. The marks for these are reflected in the invalidly difficult category in the analysis of level of difficulty of the paper.
- 1.4.9.2 There were some very easy questions (such as 1.3.2 and 1.5.1 b of Paper 1), but the team did not feel that there were so many of these as to unfairly advantage learners in this year.
- 1.4.9.3 The team did not feel that any questions were so easy or so difficult that they should be discounted as everyone would get them right or wrong. Even where there was some sense of invalid difficulty, the questions were usually longer questions and at least some learners would be likely to earn some marks.
- 1.4.9.4 In Paper 1, none of the optional questions were of an equal level of difficulty, and so choices would inevitably favour or disadvantage learners making different choices. Candidates not choosing question 3 would have been particularly disadvantaged in this regard.

#### **1.4.10 Recommendations for improving the quality and standard of the DBE Geography examinations**

- Ask more moderately difficult and difficult questions, and fewer easy questions
- Ask more questions with greater cognitive demand;
- Check more carefully that the all the questions asked are asking what is intended, and that the memo and questions are well aligned
- Consider having three questions in Paper 1, one compulsory question across all topics, and one physical and 1 human question as this will result in less reading and having to make a choice. This will benefit those learners who read very slowly and are unable to identify the "easier" questions. If less time is taken up in this way, candidates should be able to engage with more demanding questions.

The papers provide an adequate model for future papers though the points above should be considered. The quality of Paper 2 should be maintained and built upon.



## 1.5 History

### 1.5.1 Compliance in terms of format and structure

The DBE History Examination Guidelines 2015 describe the structure as follows:

CAPS examination structure	
Paper 1: 150 marks	
	<b>Choose three questions in each paper. Choose ONE source-based and ONE essay question, and ONE other.</b> <b>3 x 50 marks = 150</b>
50	Q 1 The Cold War (origins, Cold War in Europe and Cuban crisis) source-based questions
50	Q2 Independent Africa (Africa in the Cold War, case study: Angola) source-based questions
50	Q3 Civil society protests 1950s to 1970s (Civil rights and Black power movements) source-based questions.
50	Q4 Cold War (Case study of either China or Vietnam in alternate years) essay
50	Q 5 Independent Africa (Comparative case studies of Congo and Tanzania) essay
50	Q 6 Civil society protests 1950s to 1970s (Civil rights and Black power movements) essay
Paper 2: 150 marks	
	<b>Choose three questions in each paper. Choose ONE source-based and ONE essay question, and ONE other.</b> <b>3 x 50 marks = 150</b>
50	Q1 Civil resistance in SA 1970s to 1980s (Black consciousness) source-based questions
50	Q2 Coming of democracy in SA (Truth and Reconciliation Commission) source-based questions
50	Q3 End of the cold war and new world order (A new world order) source-based questions

50	Q4 Civil resistance in SA 1970s to 1980s (the crisis of apartheid in the 1980s) essay
50	Q2 Coming of democracy in SA (Negotiated settlement and the Government of National Unity) essay
50	Q3 End of the cold war and new world order (The events of 1989) essay

Both DBE papers are compliant with this structure and format.

### 1.5.2 Coverage of examinable curriculum

Both DBE papers cover the examinable curriculum.

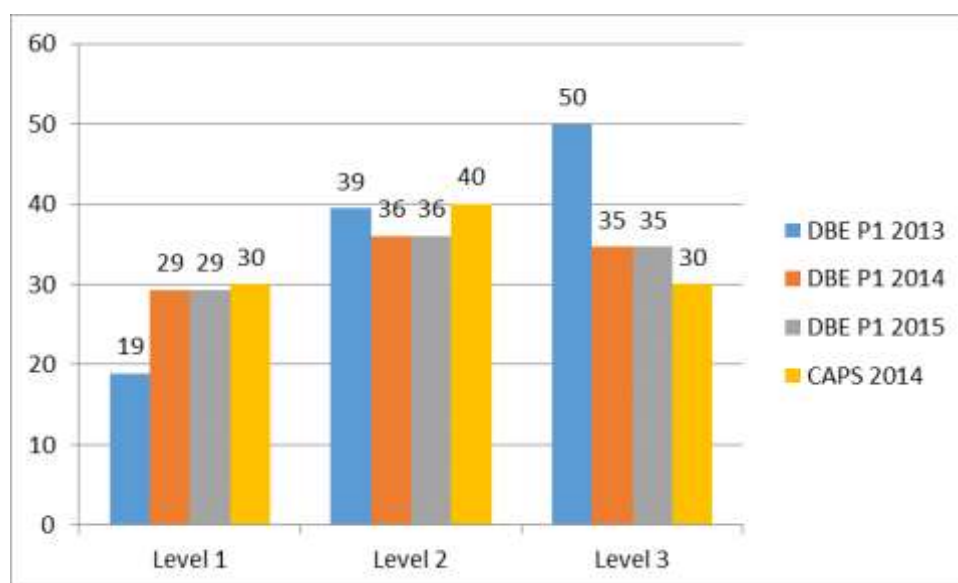
As can be seen in the table above, the entire Grade12 curriculum is covered in the two exam papers. However since learners can choose three of the six examination questions in each question, the candidates in fact only need to learn 50% of the curriculum which is actually examined. Since the Examination Guidelines provide clear information on which topics will be examined, it is possible for learners to only study 50% of the curriculum in order to write the examination.

There are no gaps in essential knowledge that are not covered in paper(s). All topics are comprehensively covered in the exam paper. As far as skill areas are concerned, there are two main skill areas covered in the paper:

- a) essay writing (which includes demonstrating knowledge and understanding of the topic, planning and structuring of the essay, using evidence to support an argument and writing coherently and logically) and
- b) working with sources (which includes extracting and interpreting information from the source, comparing sources, evaluating the reliability and usefulness of sources, and synthesising information from sources) (CAPS History 2011, p 40 and 42).

The proportions these make up would be dependent on the various options exercised by candidates. For instance for essay writing it could be as low as  $33\frac{1}{3}\%$  or as high as  $66\frac{2}{3}\%$ .

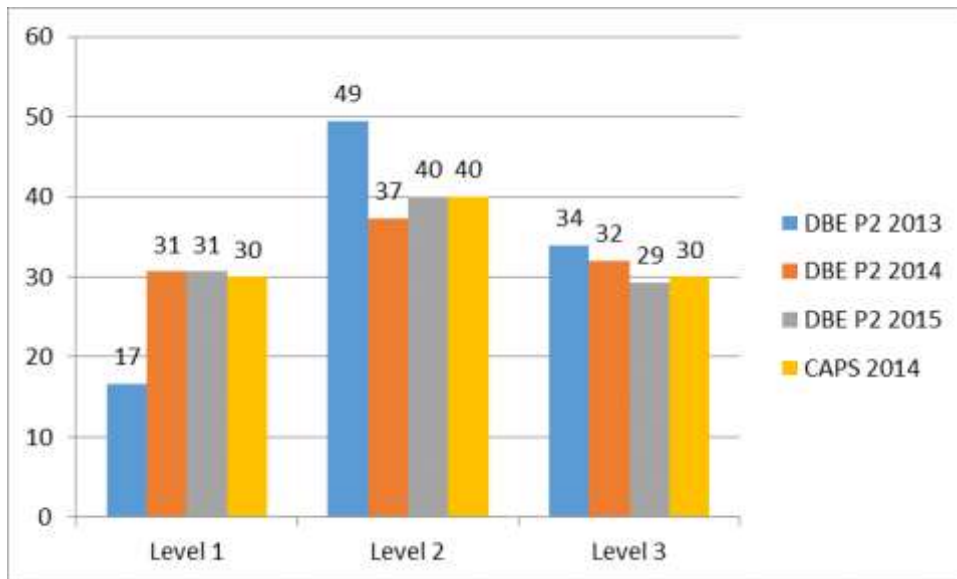
### 1.5.3 Distribution of cognitive demand in the papers



**Figure 1: Comparison of cognitive demand weightings in Paper1, 2013 – 2015 for source-based questions**

The graph shows that the cognitive demand of the source-based questions of P1 2014 and 2015 papers are exactly the same, and are very close to what is required by CAPS. The 2014 and 2015 papers allocate slightly fewer marks to Level 2 questions, while they allocate slightly more to Level 3 than is required by the CAPS.

The 2013 papers were set according to the cognitive levels required by the NCS Subject Assessment Guidelines, where 10% was allocated to Level 1, 40% to Level 2 and 50% to level 3. Thus it is not appropriate to compare these to the CAPS requirements.

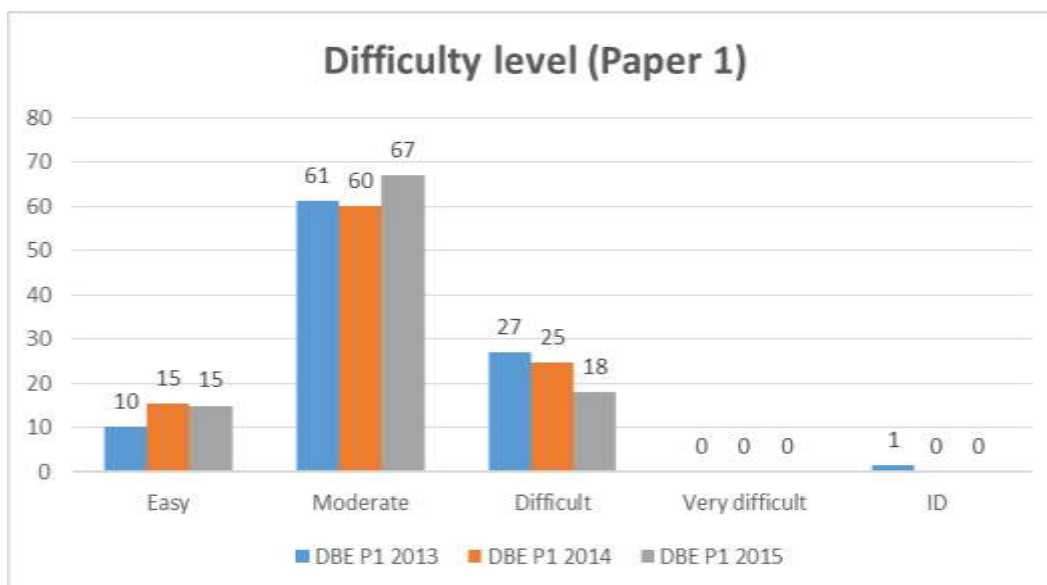


**Figure 2: Comparison of cognitive demand weightings in DBE Paper 2, 2013 – 2015 for source-based questions**

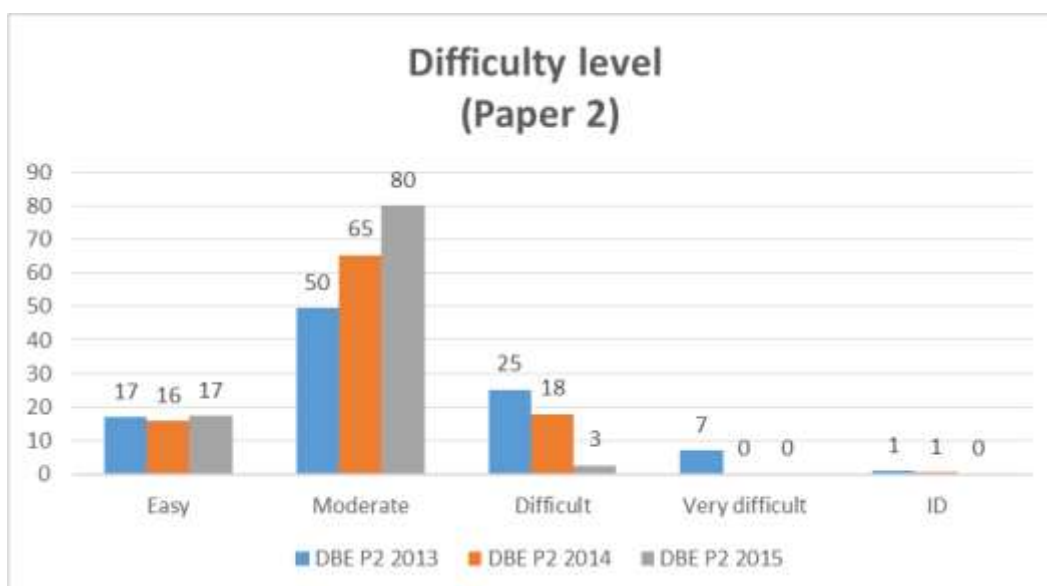
As for paper 1, Paper 2 2015 is compliant with the weighting of cognitive levels as required by CAPS. As with Paper 1, the 2013 paper was set according to the NCS requirements, and not CAPS.

#### **1.5.4 Distribution of levels of difficulty in the papers**

CAPS does not provide any specification for levels of difficulty. The analysis team believes that an 'ideal' paper may have 30% easy (all candidates can get these correct), 50% moderate, 15% difficult and 5% very difficult questions to discriminate amongst the top learners.



**Figure 3: Comparison of difficulty level weightings in DBE P1, 2013 – 2015**



**Figure 4: Comparison of difficulty level weightings in DBE P2, 2013 - 2015**

Figure 3 shows that levels of difficulty are more evenly spread in P1 although the 2015 paper does have fewer difficult and more moderate questions. This is more pronounced in Paper 2 (Figure 4), where the 2015 paper had only 3% difficult questions and 80% moderate questions. This would indicate that Paper 2 will not easily discriminate the high-achieving learners. In order to do this, the team felt that at least 15% of questions should be at a difficult level.

These difficulty level weightings include the marks allocated to the three essays, which are all categorised as moderate.

### 1.5.5 Invalid sources of question difficulty or ease

No questions in the DBE 2015 papers were categorised as having invalid sources of difficulty.

### 1.5.6 Difficulty of stimulus/source material

Sources were all well contextualised. Sources tended to be long (15 – 20 lines long) in P1 and even longer in P2 (25 – 30 lines). The reading demands for P2 were quite heavy, as the textual sources were long and many had difficult language. The sources on the Globalisation topic were particularly technical.

Breaking up long paragraphs would make the reading task easier and referencing the paragraphs with numbers would help learners. For example a question might direct a candidate to Paragraph 5 instead of requiring him or her to reread the whole source.

**Table 1: Comments on sources that were difficult DBE 2015 P1 and P2**

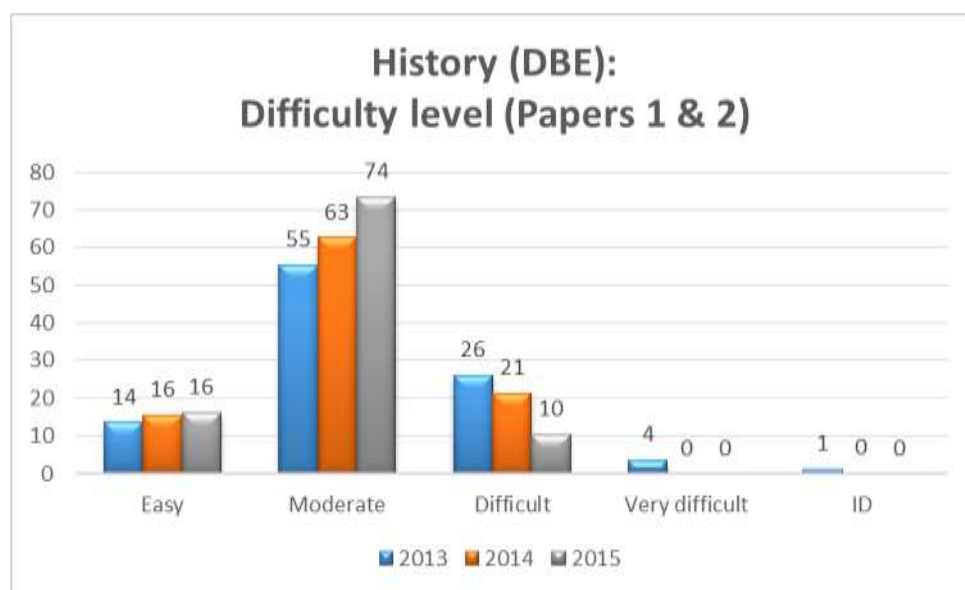
	<b>Name of source</b>	<b>Comment</b>
2015 P1	Source 3C. Report on an Interview	Complex because of the different voices in the text. It is not clear to the reader when Daisy was speaking and when Ben Fine was speaking.
2015 P2	Source 1D	Where does the extract come from – not well contextualised. Also very long, and quite technical language
	Source 2A	One long paragraph that could be broken up.
	Source 2B. Extract of Bizos' and Snyman's amnesty interrogation	This is a difficult genre as it consisted of the direct speech of Bizos and Snyman in a legal interrogation. The reader needed more information about the original inquest in 1977 to make sense of this transcript.
	Source 3B and 3C	Long and dense
	Source 3D.	Very specialist, technical economic language.

### 1.5.7 Comparability of 2013 – 2015 examination papers

In terms of cognitive level, the 2015 papers are comparable to the 2014 papers. The cognitive weighting requirements changed in 2014 with CAPS, so comparison with 2013 is not useful.

In terms of level of difficulty, there is unevenness between the 2013, 2014 and 2015 papers. Figure 5 shows that the 2015 papers have far fewer difficult questions and more moderate questions than 2014.

It is likely that candidates may experience 2015 P2 as easier than 2013 and 2014 P2, as there are very few difficult questions. However, the source material for 2015 P2 was quite long and difficult, and this may mean that learners do not find the paper that easy.



**Figure 5 Comparison of difficulty level weightings in DBE Paper 1 and 2, 2013 – 2015**

### 1.5.8 Other points regarding the standard of the examination

The team felt that P1 was of a fair standard and had good quality and varied sources.

P2 had too many very long, dense and boring sources. Particularly the sources for Globalisation had technical, economic language, which the average Grade 12

learners may find difficult to understand. However, the questions asked on these sources tended to be easy, which candidates could extract from the text.

Some of the source-based questions tended to comprehension exercises. For example P2, Question 2.1, Source 2A (Tutu's reflection on the TRC) comprised only questions that could be extracted from the source (10 marks).

There were some concerns about the P2 memo which often did not include information that was clearly extracted from the Source. For example:

*1.1.2 Why, according to the source, was SASO formed?*

The obvious answer "to break away from the multiracial NUSAS" was not in the memo.

*2.2.1 Quote evidence from the source that suggests that Mr Snyman was dishonest.*

The memo only quotes from Mr Snyman and not from Bizos.

The team expressed a concern about the predictability of the DBE Examination Guidelines, which are very specific. For example, for P1, the topic of 'Civil society protests in the US 1950s – 1970s' must use the case study of de-segregation of Central High School in Little Rock Arkansas. This is a very narrow part of the topic, which firstly, makes it difficult for examiners to find appropriate sources, and secondly makes it very predictable for learners, who know exactly what to expect.

### **1.5.9 Concluding discussion**

*1.5.9.1 Was there anything on the exams that could disadvantage learners taking this exam? (e.g. a picture/graphic that could not be read; an instruction that was confusing; an unexpected question; a question that was much too difficult).*

The team felt that P2 had many sources that were long (the average length was 25 lines). This could discriminate against learners who are slow readers. The topic on globalisation is difficult, and these sources were particularly dense. However, to mitigate this, many of the questions in this Question were Level 1.

*1.5.9.2 Was there anything on the paper that could unfairly advantage learners taking this examination? (e.g. a question that was much too easy)*

Both papers are required to have 40% of the source-based questions as Level 1. Thus there are questions that are very easy, as they can be answered with no history



knowledge by simply reading the text.  
For example, 2015, P1, 2.1.1. *Identify the two countries whose brigades were involved in launching an attack on UNITA in August 1987.* (2)

Source

2A

In August 1987, Angolan and Cuban brigades under a Russian commander...

This increase of Level 1 questions was introduced by the 2014 Examination Guidelines, possibly to offset the fact that all essays are argumentative essays, rather than having a choice of descriptive/ narrative or argumentative as was the case in the NCS 2013. However, there is no clear evidence to suggest that in fact the argumentative essays are marked more strictly, and thus may *appear* to be more difficult than they are.

*9.3 Were there any non-questions on the exam paper (i.e. questions which everyone will get wrong or right – they do not discriminate between learners)?*

Many of the questions categorised as Level 1 (40%) and easy will not discriminate as it is highly likely that many learners will get them correct, if they have an average competence in reading English.

*1.4 Were there any other questions where choices are made, where the choices were not at the same level of difficulty?*

Candidates make a choice between three essay topics, but these are all categorised as 'moderate' difficulty so there is no unevenness.

Candidates make a choice between three source-based questions, where they can select to answer one or two source-based questions.

For Paper 1, the first two questions on the Berlin Wall and Angola are of similar difficulty, while the question on the US Civil Rights Movement (Little Rock) had a much greater percentage of easy questions (40%) but also 8% difficult. In P2, the source-based questions Q2 (TRC) and Q3 on Globalisation (P2) were both at the same level of difficulty, with 28% of questions categorised as easy and 72% as

moderate. Q1 (Soweto Uprising) had more easy questions (32%) and also 8% difficult questions.

Thus it does make a difference which source-based question a learner chooses.

**Table 1: Comparison of difficulty levels of the source-based questions in DBE 2015 P1 and P2, as a percentage of marks.**

	Easy	Moderate	Difficult	Very difficult	Invalid
<b>2015 P1</b>					
Q1 (Berlin Wall)	28	72	0	0	0
Q2 (Angola)	24	76	0	0	0
Q3 (Little Rock)	40	52	8	0	0
<b>2015 P2</b>					
Q1 (Soweto 1976)	32	60	8	0	0
Q2 (TRC)	28	72	0	0	0
Q3 (Globalisation)	28	72	0	0	0

#### **1.5.10 Recommendations for improving the quality and standard of History examinations**

##### **a) Enhancing the quality**

Paragraphs within long textual sources could be helpfully labeled as Paragraph 1, Paragraph 2 etc. This will help second language learners to more easily find information.

Too many Level 1 questions tend to be extraction of information from the source, which test candidates reading ability, but not their historical knowledge. The team recommends that more Level 1 questions test historical knowledge. For example, the section on Black Consciousness could include a question "Who is Steve Biko?"

##### **b) Enhancing the standard of history examinations can be enhanced and improved.**

The standard could be enhanced if the Exam Guidelines did not provide such specific examples for each topic, which leads to predictable exams which means learners know exactly which narrow topic will be examined. For example, learners know that for Paper 1, 'Civil protests from the 1950s to the 1970s' the topic will be the case of Little Rock Arkansas. This is a very narrow focus within the bigger topic.

There should be more difficult questions which can discriminate learners at the higher end as well as more Level 1 questions that test historical knowledge, and not simply reading comprehension.

The team felt that DBE P1 2015 was generally a **good** model for future examinations, but that P2 had too many easy questions which could be extracted directly from the texts. This may have been because the texts were long and difficult.

## 1.6 Life Sciences

### 1.61 Compliance in terms of format and structure

Table 3.1.1(a) Prescribed format and structure and examination paper(s) analysed				
Official document	Name	Paper	Sections	Total marks (h)
Examination Guidelines 2011	DBE 2012	1	ALL EXAM PAPERS FOLLOW THE SAME FORMAT	150 (2½)
		2	A: Short answer, objective questions such as MCQ, terminology, columns and statements (50 marks)	150 (2½)
	DBE 2013	1	B: Two questions divided into 3-4 subsections ( 2 x 30 mark)	150 (2½)
		2	C: Data response question (20 marks); Essay (20 marks)	150 (2½)
1. Curriculum and Assessment Policy Statement 2. Circular S5 of 2013 3. Examination Guidelines 2014	DBE Final 2014	1	ALL EXAM PAPERS FOLLOW THE SAME FORMAT	150 (2½)
		2	A: Short answer, objective questions such as MCQ, terminology, columns and statements (50 marks) B: Two questions divided into 3-4 subsections (2 x 40 marks) C: Mini-essay (20 marks)	150 (2½)
1. Curriculum and Assessment Policy Statement 2. Circular S5 of 2013 3. Examination Guidelines 2014	DBE Final 2015	1	ALL EXAM PAPERS FOLLOW THE SAME FORMAT	150 (2½)
		2	A: Short answer, objective questions such as MCQ, terminology, columns and statements (50 marks) B: Two questions divided	150 (2½)

			into 3-4 subsections (2 x 40 marks) C: Mini-essay (20 marks)	
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The 2015 DBE Final papers comply with the prescribed format and length of examination papers, as given in the documents listed in Table 3.1.1(a). The format of Life Sciences Paper 1 and Paper 2 is repeated exactly in both papers in 2014 and 2015.

The topics examined in 2015 Papers 1 and 2 remained the same as in 2014. As from 2014, one topic from Grade 11 (human impact on the environment) was examined in Grade 12 Paper 1. Both examination papers examine topics taught at different times during the year, whereas previously Paper 1 examined topics taught in terms 1 and 2, and Paper 2 examined topics taught in terms 3 and 4. Table 3.1.2(a) shows the allocation of topics to examination papers in 2014 and 2015. Meiosis is the only topic that is examined in both papers.

The CAPS document includes an allocation of four weeks of teaching time in Term 4, which does not exist in reality. In 2014 teachers could not comply with the time allocation in term 4 because of the first year of implementation. In 2015 teachers were more familiar with the CAPS requirements and were able to comply with the time allocations.

### 1.6.2 Coverage of examinable curriculum

#### Topic area weightings for DBE papers for 2014 to 2015

Table 3.1.2(a) Comparison of the topic weightings (% of marks) specified and the weighting for DBE examination papers for 2014 to 2015.				
Year	Paper	Prescribed Topics	Prescribed weighting	Actual weighting
2014	2014 Final Paper 1	Meiosis	7	2,2
		Vertebrate	4	3,2
		Reproduction		
		Human reproduction	21	24,2
		Nervous system	27	28,8

		Endocrine system	10	7,8
		Homeostasis	7	7,5
		Plant Hormones	7	3,5
		Human Impact	17	14,0
		Nature of Science	Not weighted	8,3
	2014 Final Paper 2	DNA	19	16,3
		Meiosis	7	4,2
		Genes and Inheritance	30	28,5
		Evolution	44	38,7
		Nature of Science	Not weighted	12,3
2015	2015 Final Paper 1	Meiosis	7	6,7
		Vertebrate	4	4
		Reproduction		
		Human reproduction	21	20,7
		Nervous system	27	24
		Endocrine system	10	7,3
		Homeostasis	7	6
		Plant Hormones	7	6,7
		Human Impact	17	12
		Nature of Science	Not weighted	12,7
	2015 Final Paper 2	DNA	19	24,7
		Meiosis	7	8
		Genes and Inheritance	30	32
		Evolution	44	26
		Nature of Science	Not weighted	9,3

DBE Life Sciences papers in 2015 covered the whole examinable curriculum as prescribed in the relevant documents. The weightings appearing in the 2015 examinations are acceptable.

The actual weighting of topics is close to the weighting specified, given that the questions the analysts have assigned to Nature of Science would be incorporated in the content topics by the examiners.

*Table 3.1.2(b) Coverage of examinable curriculum in each paper*

<b>Year</b>	<b>Paper</b>	<b>Coverage</b>
2012 DBE	1	All
	2	All
2013 DBE	1	All
	2	All
2014 DBE Exemplar	1	All
	2	All
2014 DBE Final	1	All
	2	All
2015 DBE Final	1	All
	2	All

There are no specified weightings allocated to content areas for Paper 1. Paper 2 only covers the content area Life Processes. In Paper 1 there seems to be an equal weighting for the content areas. Paper 3 is entirely devoted to experimental procedures, which are classified here as Nature of Science. Papers 1 and 2 also contain questions about scientific procedures and skills that have their context in the relevant content, but do not test knowledge of that content. These questions are classified here as "Nature of Science", which does not receive a separate weighting in the prescribed weighting for Papers 1 and 2. The 2015 SAG specifies the weighting of all three aims across the papers and the weighting of the practical component is specified in Table 3.1.2(f) under Aim 2.

*Table 3.1.2 (f)*

<b>Weighting of the AIMS across the papers</b>		<b>AIM 1</b>	<b>AIM 2</b>	<b>AIM 3</b>
	Life Sciences P1	120 marks	40 marks	40 marks
	Life Sciences P2	30 marks	10 marks	60 marks
	Life Sciences P3 (Practical)		50 marks	
		43% of 350	29% of 350	29% of 350
	<b>The weighting for Aims 1 and 3 may differ by 5% either way.</b>			

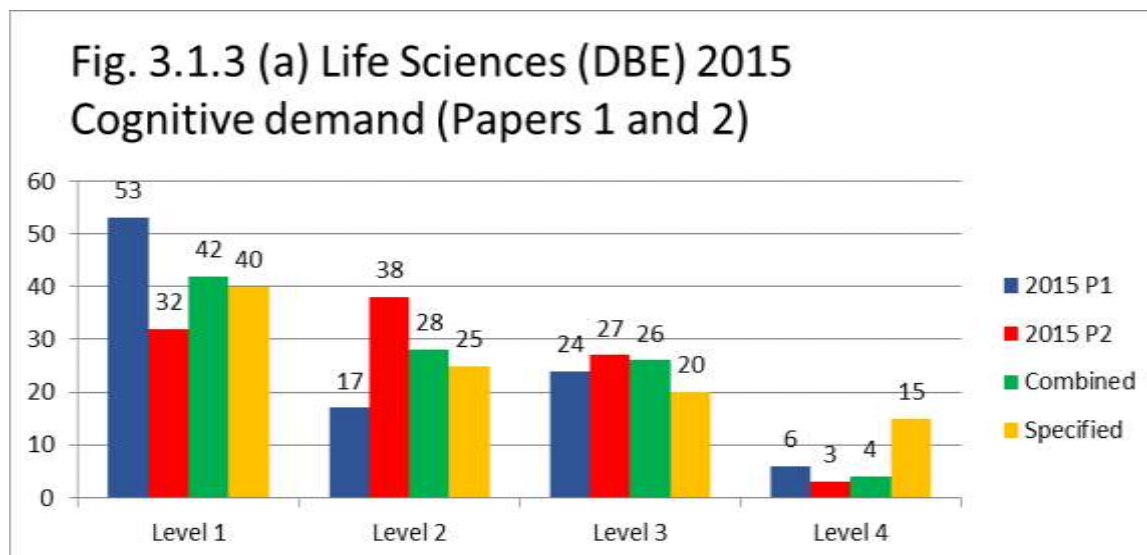
### 1.6.3 Distribution of cognitive demand in the papers

Team members analysed papers of the three examination bodies individually and compared and discussed the results. We continued until there was reasonable agreement among team members in the total scores for each type of cognitive demand.

#### Comparison of cognitive demand weightings in the DBE papers for 2015

Table 3.1.3(a) Comparison of cognitive demand weightings specified and the weighting for examination papers for 2015 (% of total marks)

Exam	Paper	Types of cognitive demand			
		Know (A)	Understand (B)	Apply (C)	Analyse, Evaluate, Create (D)
<b>Specified</b>		<b>40</b>	<b>25</b>	<b>20</b>	<b>15</b>
2015 DBE Final	P1	53	17	24	6
	P2	32	38	27	3
	Total	42	28	26	4

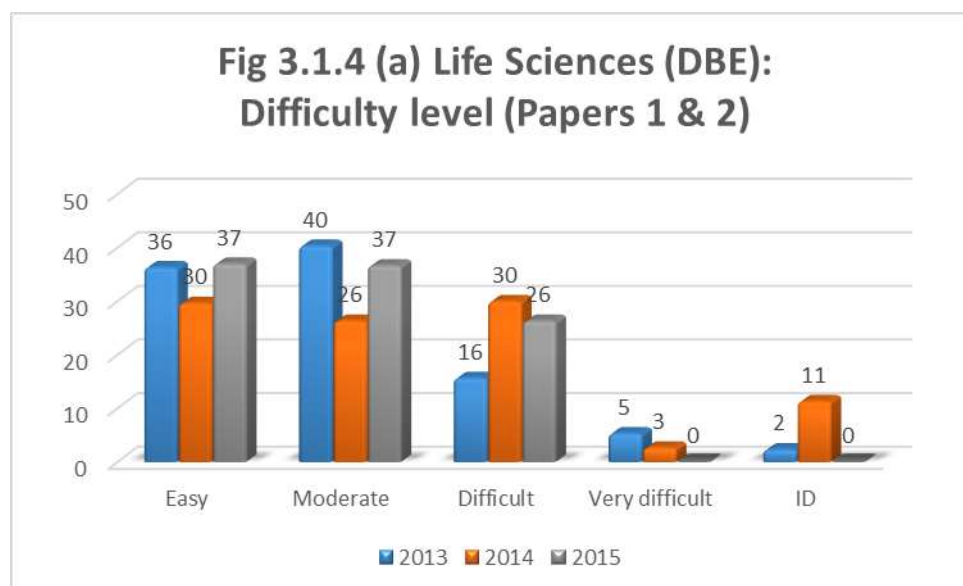


DBE Final Paper 1 was slightly overweighed in “knowing” questions, and underweighted in “understand” and higher order cognitive demand. Final Paper 2 is underweighted in ‘knowing’ questions and higher order cognitive demand but over weighted in ‘understand’ questions. Overall in both papers the split between higher order and lower order thinking questions is close to the expected weightings



however it is worrying to note that the amount of higher order questions that involve “analysing, evaluating and creating” are less than the required weightings.

#### 1.6.4 Distribution of levels of difficulty in the papers



A small percentage of marks were judged to have invalid difficulty in 2013. Final Papers 1 and 2 of 2014 had more than 10% of the marks assigned to invalid difficulty. Final Papers 1 and 2 of 2015 had no questions assigned to invalid difficulty.

Over the whole period 2013 – 2015, analysts found very few questions that were allocated to difficulty level 4. The trend for easy to moderate questions predominating in both paper 1 and 2 has continued in 2015 with 74% of the combined papers being allocated Level 1 and 2 (easy to moderate) by the panel. Only 26% is allocated to “difficult” questions and 0 to “very difficult”. This is similar to the analysis of 2013. DBE 2013 had a higher number of questions considered to be very difficult compared to 2015 but this is compensated for with the questions that are considered difficult. The analysis for 2014 was skewed due to the high levels of ID and therefore is not comparable.

**There are sufficient marks at Level 1 and 2 to enable weaker learners to pass, but too few to differentiate at the upper end.**

### 1.6.5 Invalid sources of question difficulty or ease

State how many questions in each paper were judged as having invalid sources of difficulty or ease, how much they contribute towards the total marks, and discuss how that could impact significantly on candidates' performance.

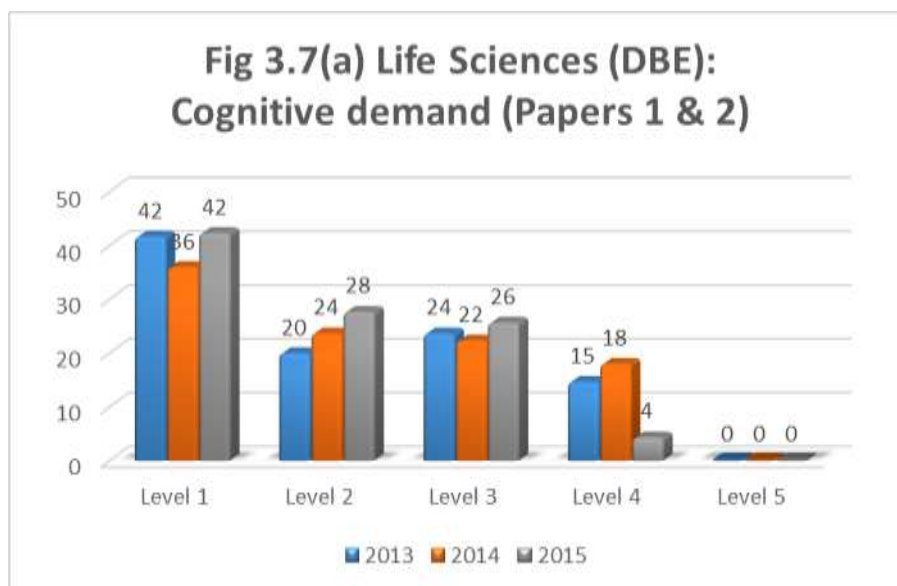
Table 3.1.5 (a) Number of questions assessed as having invalid sources of difficulty of ease in DBE papers 2013 to 2015				
Year	Paper	Q No.	Marks	Reasons for invalidity
2013	1	3.1.5	3	Memo doesn't match the question
		3.2.3	2	Misleading wording
	Total		5	
	2	1.1.8	2	Unclear what is meant by "average estimate"; alternatives are unlikely scenarios
		Total	2	
2014 Final	1	2.2.5b	3	Misleading question
		2.3.1a	1	Long, complicated description; two experiments in one
		2.3.1b	1	
		2.3.2	2	
		2.3.3	2	Clinostat is unfamiliar to most students.
		2.3.4	3	
		2.3.5	3	
		3.2.2	4	Memo doesn't match question
	Total		19	
	2	1.1.7	2	Question was confusing (below and above combinations)
		2.3.3	1	Invalid question and incorrect answer
		2.3.4	5	Incorrect answer
		2.4.1	3	Memo is incorrect
		3.3.3	4	Not in examination guidelines
	Total		15	
2015 Final	1	-	-	No questions of invalid difficulty
	2	-	-	No questions of invalid difficulty
	Total			

It is pleasing to note that there were no questions assigned to invalid difficulty in the DBE Final 2015 papers.

### 1.6.6 Difficulty of stimulus/source material

There was no inappropriate text (source/stimulus material) in the DBE papers of 2015.

### 1.6.7 Comparability of 2013 – 2015 examination papers (200 words)



DBE Papers in 2015 had a higher level of Level 1 questions (Knowing) than in 2014. There are also a higher number of Level 2 questions (Understanding) in comparison to 2013 and 2014. In total 70% of 2015 Papers are assigned to Lower Order Thinking skills which means that the weaker students should find this subject accessible in terms of cognition. There is an 8 – 10% increase in the number of questions that are classified as lower order thinking skills compared to 2013 and 2014.

Level 3 questions (Application) are very similar across 2013 to 2015 however the number of questions that involve analysis, synthesis and evaluation (level 4 higher order questions) are very much reduced in 2015 compared to 2013 and 2014. This does not allow for the differentiation of stronger candidates.

It should be noted that CAPS has increased the weighting on “knowing” to 40% from 30% previously, and reduced the weighting on “understanding” from 30% to 25%, and higher order cognitive skills from 20% to 15%. Thus, the cognitive demand of 2014

and 2015 examination papers is lower than was the case in 2013. The reversal in the topics as well as the changes in weightings of cognitive demand in 2014 and 2015 compared to 2013 must be taken into consideration.

In conclusion, the team felt that the 2015 papers were easier than 2014 – more questions were of a lower order and there was insufficient level 4 questions.

#### **1.6.8 Other points regarding the standard of the examination**

There are no other points regarding the standard of the papers of the different examination bodies.

#### **1.6.9 Concluding discussion**

The following are examples of questions which should be avoided by examiners:

- (a) Example of a question which is leading and which require the learner to choose one aspect or another where they have a 50% chance of guessing:

DBE 2015 P1

Q1.4.3 Which diagram (1 or 2) represents the state of the eye when a person is reading a book? (1 mark)

- (b) Example of a question that is dependent on getting the previous question correct. It can lead to the students getting penalised twice for an incorrect answer

DBE 2015 P1

Q1.5.4 Will a high concentration of the growth hormone named in Q 1.5.3 stimulate or inhibit growth in the roots? (1 mark)

#### **1.6.10 Recommendations for improving the quality and standard of SUBJECT examinations**

The team agrees that the quality of most questions in the 2015 Final DBE papers is acceptable. Technical quality of the papers is very good. The team expresses concern about the lack of depth in content questions, reflected in the small proportion of marks at Level 4. There are few questions requiring in-depth interrogation of information that enables the top performers to be discriminated from the average.

The 2015 DBE Papers 1 and 2 are good models for future examinations provided that a slight increase of questions of higher cognitive demand is considered.

#### **1.6.11 General recommendations for examiners of all three examination bodies**

1. Avoid asking questions which are leading and which require the learner to choose one aspect or another where they have a 50% chance of guessing.
2. Avoid asking questions which are dependent on getting the previous question correct. It can lead to the students getting penalised twice for an incorrect answer
3. Use diagrams that are clear and are scientifically accurate.
4. Use diagrams that are not readily available to everyone – many diagrams are commonly used and available on the internet
5. Avoid giving information in a previous question which can be used to answer a question later on in the paper
6. Avoid repeating the same skill in the same paper or in two consecutive questions e.g. drawing of graphs, solving of genetic crossings etc.

## 1.7 Mathematics

### 1.7.1 Compliance in terms of format and structure

The table below indicates the number of marks indicated in the CAPS document per topic area and the number of marks in the 2015 papers for each of the topic areas. This indicates that the 2015 complied with the stipulation of the CAPS document.

	Algebra	Sequences	Finance	Function	Calculus	Probability	geometry	Trigonometry	Stats	Euclidean geometry
Maths DBE 15	26	22	13	34	38	17	38	42	20	50
Required Marks as per CAPS document	25	25	15	35	35	15	40	40	20	50

**Table 1: Weighting of topic areas**

### 1.7.2 Coverage of examinable curriculum

The examination papers analysed covered the examinable curriculum. Clearly no examination paper can examine every detail of the curriculum. So for example, the DBE 2015 paper 2 does not examine the graph of the tan function in trigonometry. However the graphs of the sin and cos functions are examined here and the tan function is used in other trigonometry questions. Thus although no single examination paper examines every detail of the curriculum, the 2015 examination papers provide full coverage of the examinable curriculum at a broader level (e.g. trigonometric graphs are examined even if it is not possible to examine EVERY trigonometric graph mentioned in the curriculum).

### 1.7.3 Distribution of cognitive demand in the papers

Table 2 shows the percentage of marks that fell into each of the categories of cognitive demand for the 2013, 2014 and 2015 examinations. The weighting stipulated by CAPS is also provided. However, as discussed in more detail below, the

team do not feel the categories of cognitive demand are sufficiently well defined to provide a reliable analysis.

<b>DBE Paper 1&amp;2</b>	<b>Knowledge</b>	<b>Routine</b>	<b>Complex Procedure</b>	<b>Problem Solving</b>
2013	16	47	32	6
2014	18	54	25	4
2015	16	59	20	5
CAPS requires	20	35	30	15

**Table 2: Comparison of cognitive demand weightings in the papers**

The table suggests that the 2015 papers did not comply with the weighting of cognitive demand as stipulated in CAPS. The team's analysis suggested that the papers were too heavily weighted towards routine procedures and did not contain sufficient weighting for problem solving. However the team felt that the problem might be a result of inadequacies in the taxonomy itself rather than a result of problems with the examination per se.

The CAPS document of 2011 and the Examination Guidelines released in 2014 provide descriptions of the levels of cognitive demand. However, the descriptors of the levels are contradictory in places. (e.g. "estimation and appropriate rounding of numbers" is classified as "knowledge" in the Examination Guidelines, but as "routine procedures" in CAPS). In addition to the problems of contradictory descriptions in the two documents, the description of each of the levels in both these documents is not entirely clear. For example, it is not clear how "complex procedures" differ from "problem solving" as the descriptors for both allude to higher order reasoning, solving problems and having no obvious route to the solution. The team queried whether it would be possible, in a time-limited examination to include 15% worth of true problem solving questions (i.e. questions where there is no clear starting point or clues as to the approach to take). It is also not clear whether a well-known procedure that contains many steps or tricky algebraic manipulation should be classified as a routine or complex procedure. This makes the taxonomy very difficult to work with, and, means that differences between the team's analysis of the

papers and the stipulated weighting in CAPS might be a result of different interpretations of the categories.

#### 1.7.4 Distribution of levels of difficulty in the papers

The team judged the level of difficulty of questions based on the assumption that learners writing the examination would have been taught the full curriculum in an adequate manner. The team considered whether a question would be easy, moderate, difficult or very difficult for the average learner to answer. In order to make clear and consistent judgments we further refined this as follows: Easy questions would be those questions that the learner who just passes should be able to do. Moderate questions would be more challenging than this but still be accessible to the student aiming for a “solid pass” and should indicate a mastery of the routine procedures in mathematics. Difficult questions are challenging questions that would be aimed at those wanting to demonstrate a good grasp of mathematics. Very difficult are aimed at the top students. With these judgments in mind the teams proposed ideal split of weights were as follows:

	<b>Easy</b>	<b>Moderate</b>	<b>Difficult</b>	<b>Very difficult</b>
Team's proposed ideal weighting	30%	30-35%	20-25%	15%

**Table 3: The team's proposed weighting of levels of difficulty in the examination**

<b>DBE Paper 1</b>	<b>Easy</b>	<b>Moderate</b>	<b>Difficult</b>	<b>Very Difficult</b>	<b>Invalid</b>
2013	31	32	35	3	
2014	29	34	32	5	0
2015	33	29	27	11	0

**Table 4: Comparison of level of difficulty in the DBE Paper 1**

Table 4 indicates that Paper 1 in 2015 was aligned to the team's proposed ideal weighting, however it is on the difficult side of this ideal weighting. It is also indicated that Paper 1 in 2015 was more difficult than Paper 1 of 2013 and 2014. In particular the weighting of very difficult questions increased in 2015.



<b>DBE Paper 2</b>	<b>Easy</b>	<b>Moderate</b>	<b>Difficult</b>	<b>Very Difficult</b>	<b>Invalid</b>
2013	33	27	31	10	0
2014	37	41	20	2	0
2015	30	31	34	4	1

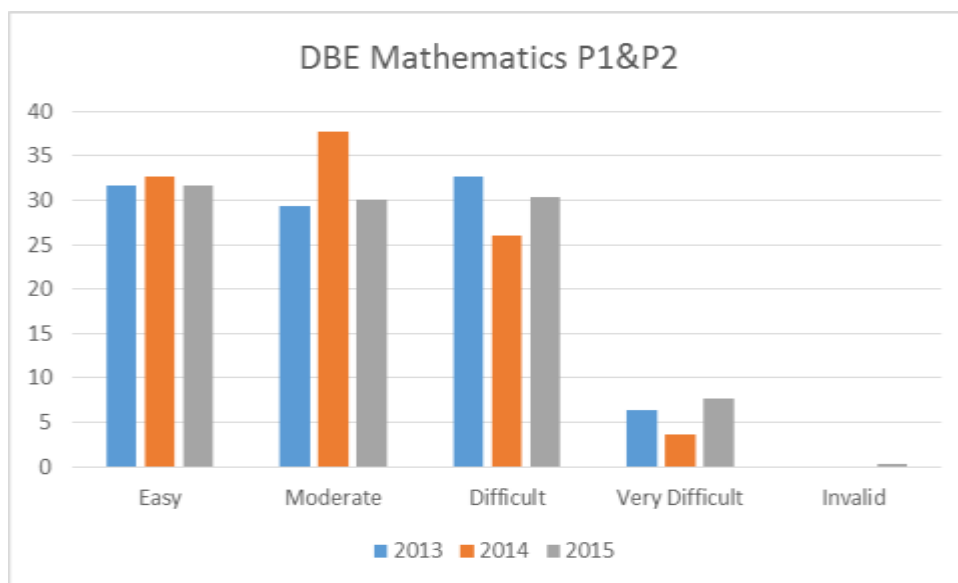
**Table 5: Comparison of level of difficulty in the DBE Paper 2**

Euclidean geometry was reintroduced into paper 2 in 2014. The reintroduction of Euclidean geometry complicates the analysis of paper 2 and makes the comparison to 2013, where Euclidean geometry was not examined as part of the core curriculum, very difficult. Many teachers preparing learners for the examinations in 2014 were teaching Euclidean geometry for the first time. Anecdotal evidence suggests that many teachers are not confident teaching Euclidean geometry and in some cases are not teaching it or are putting insufficient focus on it. In our judgment of the level of difficulty of the questions we had to assume competent teaching. Given competent teaching, the Euclidean geometry questions were judged as easy in 2014. In 2015, the Euclidean geometry questions were certainly harder than those of 2014, but the team judged a significant proportion of them as falling into the easy or moderate difficulty categories. However the team was well aware that many learners, who had not had adequate teaching, would experience these easy or moderate questions as difficult or very difficult questions. Thus the 2014 and 2015 analysis of paper 2, shown in table 4 above underestimates the difficulty that many learners would have experienced.

Thus in summary 2015 paper 2 aligns reasonably well with the team's proposed weighting except that has too few very difficult questions. It was more difficult than 2014 paper 2. It is very hard to make a comparison to 2013 paper 2 because learners who had been taught geometry well would experience the 2015 paper as easier than the 2013 paper, but those who had not, would have found it more difficult.

DBE Paper 1&2	Easy	Moderate	Difficult	Very Difficult	Invalid
2013	32	29	33	6	0
2014	33	38	26	4	0
2015	32	30	30	8	0

**Table 6: Comparison of level of difficulty in the DBE Paper 1 and 2 combined**



**Graph 1: Comparison of difficulty level weightings in the paper(s)**

Table 6 and graph 1 provide the comparison between the paper 1 and 2 combined over the period 2013 – 2015.

Overall the distribution of marks to levels of difficulty in the 2015 DBE Mathematics examination was closely aligned to the ideal weighting proposed by the evaluation team. Paper 1 of 2015 was very closely aligned to that ideal weighting; paper 2 had slightly too few very difficult questions but a greater preponderance of difficult questions.

Comparing the papers across the years, we see that the 2015 papers were more difficult than the 2014 paper. The 2013 and 2015 papers contained a similar number of easy and moderate questions, and a similar number of marks in the combined

difficult or very difficult categories. However the 2015 papers had a greater proportion of very difficult questions than the 2013 papers and thus were more difficult than the 2013 papers and provided more challenge for the top learners. In addition this analysis is based on the assumption that the learners have been adequately taught the whole curriculum. As discussed more extensively above, it is likely that many learners will not have been taught Euclidean geometry adequately. It is also likely that probability, which is a new section in paper 1, would have been an issue for many teachers. These topics together account for more than 20% of the examination and thus many learners, particularly those from poorer schools, would have experienced the paper as more difficult than this analysis suggests.

#### **1.7.5 Invalid sources of question difficulty or ease**

Only one question (question 3.4 in paper 2) was invalid as it was impossible to calculate the length of SR unless you assumed it was parallelogram (this information was only given in a subsequent question and could not be used in this question). It was worth 1 mark.

#### **1.7.6 Recommendations and comments on specific questions**

There were a few places where there were issues with a question which did not necessarily detract from the learner's ability to answer the question, but which could be improved. These are listed below:

Paper 1 qu 6.2: The fact that learners are asked to draw a "neat" sketch graph might make learners feel they would need to include the intercepts with the axes. Some indication needs to be given to the learners that they might not be able to find all the information they would typically have been expected to show if give the equation of the function.

Paper 1 qu 7.1: The graphs look like two straight lines which is misleading. The inclusion of the graphs doesn't add anything to the question, but because they look straight it could confuse learners.

Paper 1 qu 9.4: The phrasing of the question, using "significance", makes it seem like more is being asked for than actually is.

### **1.7.7 Recommendations for improving the quality and standard of the Mathematics examinations**

The team felt that the 2015 Mathematics examinations were generally of a good standard. The team noted that particular topics (e.g. finance, probability and geometry) tended to have a greater concentration of the difficult questions and that this tended to be the case in most years. The team felt this should not always be the case. In a similar vein the high proportion of easy questions in the statistics section means it is difficult to include routine easy questions (e.g. finding the midpoint or length of a line segment in analytical geometry) in other sections.

## 1.8 Mathematical Literacy

### 1.8.1 Compliance in terms of format and structure

**Table 1: Format and structure of Mathematical Literacy Examination Papers**

Exam	Duration (hrs)	Mark allocation	Number of questions and type	Probability	Basic topics
2013 DBE P1	3	150	5 – 8 shorter	Covered under LO4: Data handling	Covered in Question 1: context free
2013 DBE P2	3	150	4 – 6 longer Q2: LO1 only assessed	Covered under LO4: Data handling	Integrated to all questions
2014 DBE P1	3	150	4 per topic; 1 integrated Q1, Q2 and Q3 are not supposed to be integrated	Integrated to one or more	
2014 DBE P2	3	150	4/5 all integrated		
2015 DBE P1	3	150	4 per topic; 1 integrated		
2015 DBEP2	3	150	4/5 all integrated		

The DBE 2013, 2014 and 2015 Final Mathematical Literacy Papers generally complied in every respect with the format and structure of the examination as described in the Subject Assessment Guidelines (SAG) both for the NCS and CAPS.

### 1.8.2 Coverage of examinable curriculum

**Table 2: Coverage of examinable curriculum in 2013, 2014 and 2015 DBE papers**

	Paper 1	Paper 2	Combined Overall
<b>2013 DBE</b>	Most of the curriculum	Most of the curriculum	Almost all
<b>2014 DBE</b>	Most of the curriculum	Most of the curriculum	Almost all
<b>2015 DBE</b>	Most of the curriculum	Most of the curriculum	Almost all

The design of the Mathematical Literacy examination requires that the whole curriculum be covered by the two papers which are equally weighted. Therefore it is unrealistic to expect that each paper will cover the whole curriculum. The sub-topics that were omitted constitute very little of the total number in the whole curriculum. All the papers covered the essential knowledge of the curriculum.

**Table 3: Topics that were omitted in all examinations**

<b>2013 DBE</b>	Banking, loans and investments, inflation, prediction
<b>2014 DBE</b>	Banking, loans and investments
<b>2015 DBE</b>	Banking, loans and investment, inflation, interest
<b>All papers: Topics which are impossible to examine in a written examination</b>	Measurement of mass and volume; Developing questionnaires; Collecting and classifying data; Building models

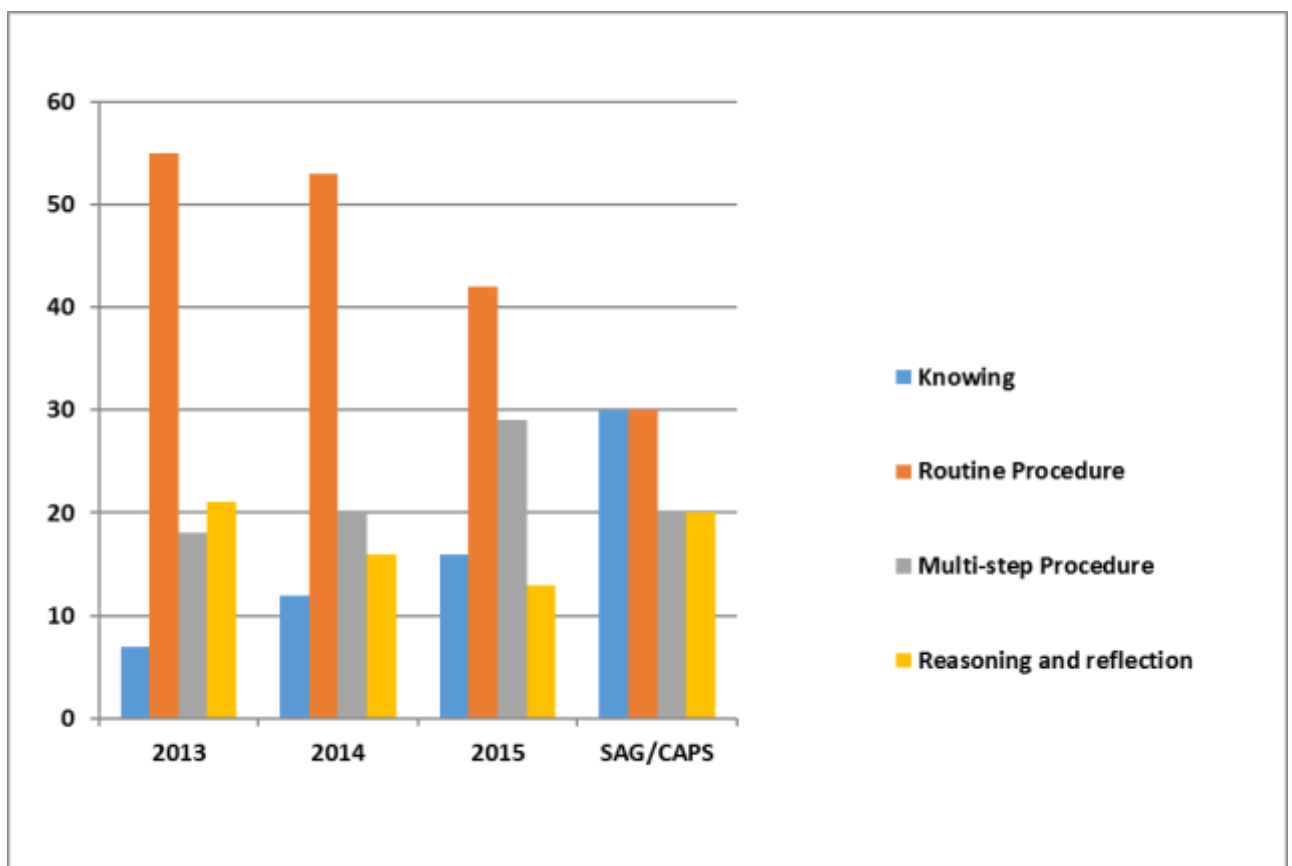
### 1.8.3 Distribution of cognitive demand in the papers

Table 4 below shows the combined overall weighting of cognitive demand levels in the DBE papers for the last three consecutive years. This table of values was used to generate the graph in Figure 3.1.1 below.

**Table 4: Combined overall percentage weighting of cognitive demand levels**

Cognitive demand	2013	2014	2015	SAG
Knowing	7	12	16	<b>30</b>
Routine Procedure	54	52.5	42	<b>30</b>
Multi-step Procedure	18	20.5	29	<b>20</b>
Reasoning and reflection	21	15.5	13	<b>20</b>

**Figure 1.8.1: Comparison of cognitive demand weightings of DBE papers with SAG/CAPS**



From Table 4 and Figure 3.1.1 above, the following comments can be made:

- The percentage marks allocated to **Knowing** in the 2015 papers were significantly lower than the CAPS, but has improved from 2013 and 2014 papers. Although the percentage increased each year, it is still much lower than the SAG/CAPS.

- The percentage marks allocated to **Routine Procedure** is significantly higher than stipulated in CAPS, although it has decreased in the 2015 paper.
- The percentage marks allocated to **Multi-step Procedure** has gradually increased from 2013 to 2015, where 2014 was the closest to the requirements set in the CAPS.
- The percentage marks allocated to **Reasoning and Reflection** in the 2015 papers is lower than previous years and did not meet the CAPS requirements.

The team believes that there still is a significant area of overlap between cognitive levels 1 and 2. It is our opinion that these two cognitive levels are actually at the same level of cognitive demand and should be conflated into one level with two strands or types of question. With that being said, if the first two levels of cognitive demand are joined in the 2015 DBE papers, it will carry a weighting of 58%, as were the CAPS requirements stipulates 60%. This indicates a very good compliance with the CAPS in terms of Knowing and Routine Procedure in the 2015 DBE papers.

The Multi-step questions in the 2015 DBE papers are significantly higher than previous years and CAPS, as there were questions which counted out of many marks, e.g. 10, 11 and 12 marks.

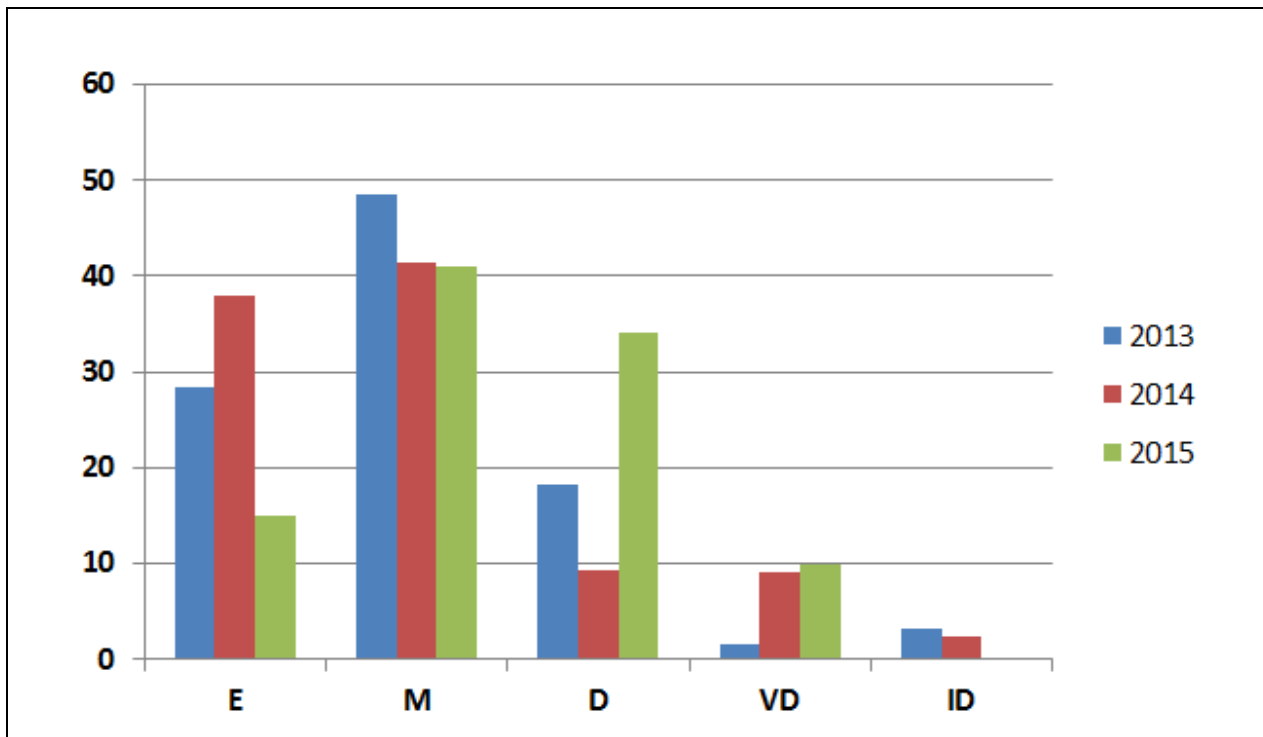
Regarding the questions at the **highest level of cognitive demand**, the team felt that there were sufficient marks at this level, although it was lower than the CAPS. This might be a result of splitting of marks, where necessary, for individual questions that have 5 or more marks.

#### **1.8.4 Distribution of levels of difficulty in the papers**

There are no specifications in CAPS in as far as the distribution of levels of difficulty in the examinations papers is concerned. Hence, the Team uses their own professional judgement and experiences in determining whether an item under analysis is regarded as Easy (E), Moderate (M), Difficult (D), Very Difficult (VD) or Invalid Difficult (ID). The graph below indicates the overall spread of these categories for the examinations pertaining to 2013, 2014 and 2015.



**Figure 1.8.2: Comparison of overall percentage weightings of difficulty level in the paper(s)**



From Figure 3.1.2 above, the following comments can be made:

(a) The Easy and Moderate questions accounted for almost

- 76% of the marks in 2013
- 79% of the marks in 2014
- 56% of the marks in 2015

These combined weightings for Easy and Moderate questions show that candidates should have easily passed the 2013, 2014 and 2015 examinations even without attempting the Difficult and Very Difficult questions, but the pass rate should decrease in 2015.

(b) The Difficult questions accounted for almost

- 18.3% of the marks in 2013
- 9.33 of the marks in 2014
- 34% of the marks in 2015

(c) The Very Difficult questions accounted for almost

- 1.65% of the marks in 2013
- 9% of the marks in 2014

- 10% of the marks in 2015
- (d) The Invalid Difficult questions accounted for
- 3.15% of the marks in 2013
  - 2.33% of the marks in 2014
  - 0% of the marks in 2015

The 2015 papers indicate that overall there are at least 34% of the questions of a difficult degree and at least 10% of the questions of a very difficult degree, giving a total of 44% for these two categories. The implication here is that according to our analysis the 2015 papers overall are more difficult than the 2013 (19.95%) and 2014 (18.33%) papers. This would allow for fairly good differentiation of the A-grade learners (extremely high-achieving/ability learners) to be discriminated from other high ability/proficiency learners. Obviously, this is an improvement in comparison to 2013 and 2014 papers. On the other hand the calculations above show that, as is expected, the 'Very difficult' level is the least weighted overall. It is noted that the Invalid Difficult questions have decreased from a high 3.15% in 2013 to 0% in 2015.

#### 1.8.5 Invalid sources of question difficulty or ease

**Table 5: Number of questions assessed as having invalid sources of difficulty of ease**

Exam	Questions	Number of questions	Number of marks
<b>2013 DBE P1</b>	Q2.1.4 Diagram Q4.1.6 The simplest form of the ratio Q4.2.1 The keys on the map	3	11
<b>2013 DBE P2</b>	None	0	0
<b>2014 DBE P1</b>	Q1.2.7a) Wording round off instead of round down	1	2
<b>2014 DBE P2</b>	Q2.1.2 Factors in the memo not in line with the question Q3.2.4 The wording of	2	5

	this question is very poor, this affected the memo response		
<b>2015 DBE P1</b>	None	0	0
<b>2015 DBE P2</b>	None	0	0

From Table 5 the marks the learners could not get decreased each year. In 2013, 11 marks and in 2014, 7 marks were at risk of not being attained. This constitutes small percentage of the marks for the exam. Time spent on these questions may have negatively affected the attention given to further questions. In 2015 there are no invalid sources of difficulty. This is an improvement on all previous years' papers and this indicates that the examiners have improved in terms of the quality of papers they set.

#### 1.8.6 Difficulty of stimulus/source material

**Table 6: The appropriateness of stimulus material**

<b>Exam</b>	<b>Question</b>	<b>Mark allocation</b>	<b>Explanation</b>
<b>2013 DBE P1</b>	Q2.1.4		The calculation, using the given formula, could have been done without using the diagram and the text explaining, which means that the stimulus in this case was just to create an impression of an "authentic" context.
<b>2013 DBE P2</b>	None	-	-
<b>2014 DBE P1</b>	None	-	-
<b>2014 DBE P2</b>	None	-	-
<b>2015 DBE P1</b>	None	-	-
<b>2015 DBE P2</b>	Q1.1.1	2	The NOTE provided on the text is giving the method on how to determine the monthly salary from a weekly salary. The source also provides the expected answer. This is too easy for Paper 2.

### 1.8.7 Comparability of 2013 – 2015 examination papers

**Table 7: Comparability of examinations**

Paper	2015 DBE P1	2015 DBE P2	2015 DBE Overall
2013 DBE P1	Much better than		
2013 DBE P2		Much better than	
2014 DBE P1	Much better than		
2014 DBE P2		Much better than	
2013 Overall			Much better than
2014 Overall			Much better than

The quality of the 2015 DBE Final papers was better mostly with respect to the type of question. The earlier years' papers had many more contrived questions, awkward and unnecessary diagrams or merely illustrative images. The 2015 DBE Final papers also had more very challenging questions although, like the other years, still focussed on the easy type of question. The 2015 DBE Final papers have fewer language issues and fewer technical problems although the marking memo is still problematic.

### 1.8.8 Other points regarding the standard of the examination

#### **Problematic questions**

- Paper 1, Question 3.1.4  
Question could have been changed to test the same skill, as there are too many seats to count manually, e.g. counting rows.
- Paper 1, Question 5  
Does not state 'in thousands', but R000 (not familiar format)
- Paper 2, Question 1.2.1  
Question paper should have specified if Drivers were female and/or male
- Paper 2, Question 3.4  
The fact that the panels are sold per volume measurement is unrealistic and very confusing.
- Paper 2, Question 4.2  
Question has a lot of text to read and interpret as well as three tables, which makes it difficult to get the correct answer.

### **Errors on question paper**

- Paper 1, Question 2.1.2  
The height in the given formula should have been a perpendicular height.
- Paper 1, Question 4.2.2  
% symbol should have been omitted
- Paper 1, Question 5.2.2  
The question is not asking the learner to leave the answer in a simplified form; yet the memo is expecting the answer to be simplified; it even recognised this by awarding a mark for it.
- Paper 2, Question 4.1.4  
First monthly instalment for residence fees, will not necessarily be paid on registration. Question paper should have indicated when instalment is payable (beginning or end of month)

### **Errors on memorandum**

- Paper 1, Question 3.1.6  
Memo should include percentage probability
- Paper 1, Question 4.1.5  
Two options should be marked. Middle East can be included in Asia.
- Paper 1, Question 4.1.6b)  
Can be confusing to mark as many coordinates overlap
- Paper 1.2.1, Question 1.2.1  
Answer can also be expressed as percentage 69,607%
- Paper 2, Question 4.1.4  
First monthly instalment for residence fees, will not necessarily be paid on registration.
- Paper 2, Question 5.3  
Memo should include measurements according to question paper.  
There were not enough options in the memo. Any valid answer should have been accepted.

### **Language issues**

- Paper 1, Question 2.2  
'reels' not a common term

- Paper 1, Question 2.3.2  
'before the lid is placed on the jar' is irrelevant.
- Paper 1, Question 2.3.2  
Error in denominator unit, should have been cm squared

### **General and/or Technical issues**

- Annexures fixed to question paper booklet, makes it very difficult to refer to these documents while answering questions
- The question with regards to the wood panels, Paper 2, Question 3.4 was contrived as realistically, panels will not be sold in volumes, but rather using area. This paper also included many questions which counted out of a lot of marks. This made it unnecessarily difficult and complicated.
- 22% of the marks for Paper 2 came from 3 questions. If a learner gets it wrong, it would put them at a disadvantage. There should be fewer questions, containing too many marks. e.g.  
  - Paper 2, Question 1.1.2 - 10 marks
  - Paper 2, Question 3.3.2 – 11 marks
  - Paper 2, Questions 3.4 – 12 marks

### **1.8.9 Concluding discussion**

**1.8.9.1 Was there anything on the exams that could disadvantage learners taking this exam?** (e.g. a picture/graphic that could not be read; an instruction that was confusing; an unexpected question; a question that was much too difficult)

- Paper 1 Question 4.2.2  
The percentage symbol indicates that 100 must be divided by 100, which will result in an answer of 1. The % symbol should have been omitted.

**1.8.9.2 Was there anything on the paper that could unfairly advantage learners taking this examination?** (e.g. a question that was much too easy)

- None

**1.8.9.3 Were there any non-questions on the exam paper** (i.e. questions which everyone will get wrong or right – they do not discriminate between learners)?

- None

**1.8.9.4 Were there any other questions where choices are made, where the choices were not at the same level of difficulty?**

- None

**1.8.10 Recommendations for improving the quality and standard of SUBJECT examinations**

**The formulae given must be in line with the CAPS**

- Paper 1, Question 2.1.2:

Given:  $\text{Area of triangle} = \frac{1}{2} \times \text{base} \times \text{height}$

Should be:  $\text{Area of triangle} = \frac{1}{2} \times \text{base} \times \text{perpendicular height}$

- Paper 1, Question 4.2.2:

Given:

$\text{Percentage social network usage} = \frac{\text{number of active social network users}}{\text{total world population}} \times 100\%$

Should be:

$\text{Percentage social network usage} = \frac{\text{number of active social network users}}{\text{total world population}} \times 100$

**Questions posed should be realistic**

- Paper 2, Question 3.4:

Wood panels would be sold in area, not in volumes as indicated in the question.

**Good model questions**

- The use of IRP5 and UIF as resources were encouraging, e.g. Paper 1, Question 1.
- Learners were asked to critique a recommended diet to reduce sugar intake. This is relevant and beneficial as learners can relate to the question, e.g. Paper 2, Question 2.
- Question addressing critical reasoning and verifying statements, e.g. Paper 2, Question 2.2.3.
- Students should be able to relate to specific questions and it must draw interest, e.g. Paper 2, Question 4.

## 1.9 Physical Sciences

### 1.9.1 Compliance with the CAPS

Table 1 - Format and structure of Physical Sciences Examination Papers			
Exam paper	Focus area	Duration (hrs)	Mark allocation
DBE P1 2013	Physics	3	150
DBE P2 2013	Chemistry	3	150
DBE P1 2014	Physics	3	150
DBE P2 2014	Chemistry	3	150
DBE P1 2015	Physics	3	150
DBE P2 2015	Chemistry	3	150

In Table 1 above, the DBE Physical Science papers that were analysed for 2013 to 2015 are presented. The papers were consistent with the required format in all cases.

According to CAPS, all 2015 Physical Science papers are required to consist of:

- 20 marks multiple choice questions
- 130 marks structured response questions

None of the 2015 DBE examinations deviate from these.

### 1.9.2 Coverage of examinable curriculum

Table 2 - Coverage of examinable curriculum in each paper	
Paper	Coverage of Content Areas
DBE P1 2013	All of the curriculum is covered
DBE P2 2013	All of the curriculum is covered
DBE P1 2014	All of the curriculum is covered
DBE P2 2014	All of the curriculum is covered
DBE P1 2015	All of the curriculum is covered
DBE P2 2015	All of the curriculum is covered

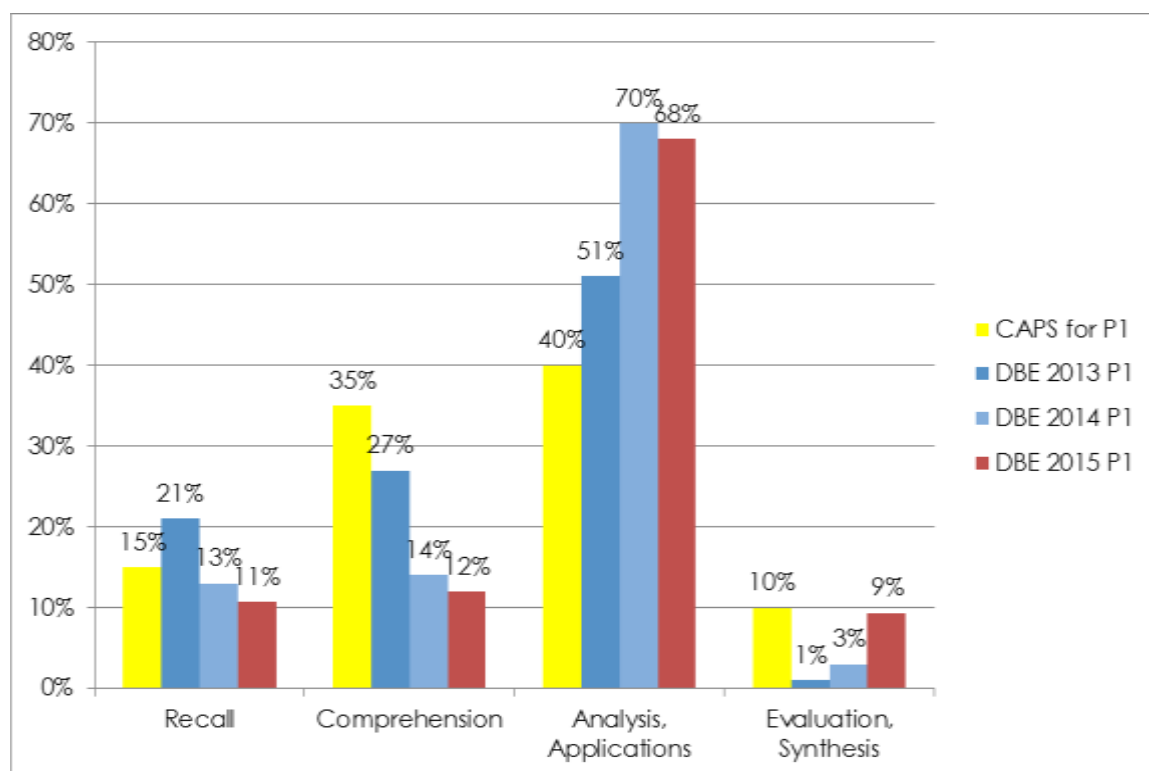


### 1.9.3 Distribution of cognitive demand in the papers

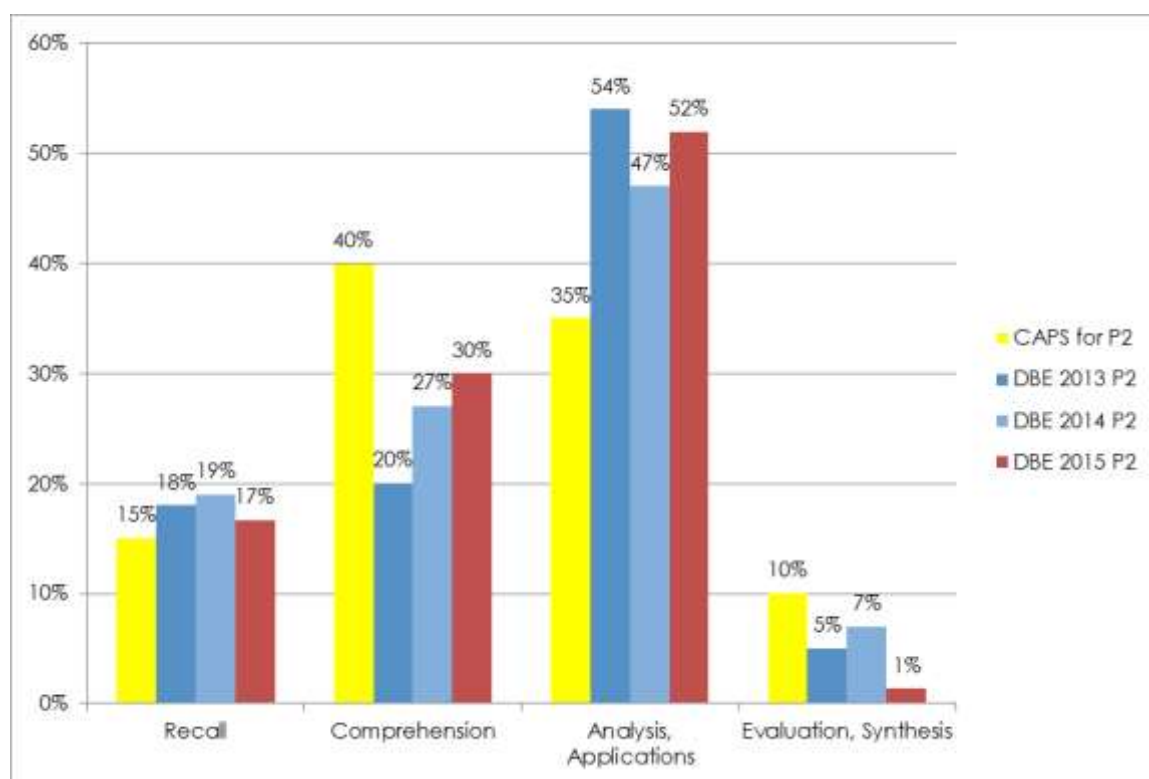
**Table 3 - Comparison of cognitive demand weightings specified and the percentage for the paper(s) analysed**

Paper	Percentage of marks allocated to questions at each of the different types of cognitive demand			
	Recall	Comprehension	Analysis, Applications	Evaluation, Synthesis
DBE P1 2013	21%	27%	51%	1%
DBE P2 2013	18%	20%	54%	5%
DBE P1 2014	13%	14%	70%	3%
DBE P2 2014	19%	27%	47%	7%
DBE P1 2015	11%	12%	68%	9%
DBE P2 2015	17%	30%	52%	1%
CAPS for P1	15%	35%	40%	10%
CAPS for P2	15%	40%	35%	10%

#### Paper 1 Cognitive Demand



## Paper 2 Cognitive Demand



From the table and graphs above, the following comments can be made about the 2015 papers:

- The percentage of marks allocated to Analysis and Application is generally higher than stipulated in CAPS, for both Paper 1 and Paper 2.
- The percentage of marks allocated to Comprehension is generally lower than stipulated in CAPS, as much as 50% lower for Paper 1.
- The recall questions are within a 5% variation from the stipulated percentage.
- The Evaluation and Synthesis questions are lower than stipulated in CAPS for Paper 2. Paper 1 has the required percentage of marks for this cognitive skill.

However, it needs to be borne in mind that these categories of cognitive demand are very difficult to judge accurately for Physical Sciences examinations, as they do not adequately describe the types of thinking that are typically involved in the exam questions. As a result, different evaluators might arrive at varying judgments on these. One can therefore not make strong judgments on the basis of these

percentages. The levels of difficulty are far more informative for Physical Sciences examinations (see Section 4 of this report).

#### 1.9.4 Distribution of levels of difficulty in the papers

Since there has been a notable increase in the level of challenge of papers from 2012 to 2015, it was decided to retain the valuable data yielded from the 2012 analysis of the examination papers in the discussion of the levels of difficulty of the examination papers. The reason for keeping this data is that the evaluation team considered the standard of the 2012 examination to be of an acceptable level of difficulty, and therefore needs to be kept as a guideline against which to assess the subsequent examinations.

<b>Table 4: Percentage of marks awarded to the different levels of difficulty in the examination paper(s)</b>						
	<b>Easy</b>	<b>Moderate</b>	<b>Difficult</b>	<b>V. Difficult</b>	<b>Invalid</b>	<b>Overall Difficulty Score</b>
<b>Paper 1</b>						
DBE 2012 P1	11%	47%	37%	5%	0%	<b>2.37</b>
DBE 2013 P1	17%	45%	29%	9%	3%	<b>2.30</b>
DBE 2014 P1	10%	37%	45%	7%	0%	<b>2.50</b>
DBE 2015 P1	5%	42%	36%	17%	0%	<b>2.66</b>
<b>Paper 2</b>						
DBE 2012 P2	18%	43%	29%	9%	1%	<b>2.30</b>
DBE 2013 P2	7%	35%	55%	0%	0%	<b>2.50</b>
DBE 2014 P2	12%	35%	46%	7%	2%	<b>2.47</b>
DBE 2015 P2	7%	37%	35%	20%	1%	<b>2.69</b>

<b>Table 5: Percentage of marks awarded to the different levels of difficulty for all examination papers combined</b>						
	<b>Easy</b>	<b>Moderate</b>	<b>Difficult</b>	<b>V. Difficult</b>	<b>Invalid</b>	<b>Overall Difficulty Score</b>
<b>Paper 1&amp;2 Combined</b>						
DBE 2012 (P1&P2)	14%	45%	33%	7%	1%	<b>2.33</b>
DBE 2013 (P1&P2)	12%	40%	42%	4%	2%	<b>2.40</b>
DBE 2014 (P1&P2)	11%	36%	46%	7%	1%	<b>2.49</b>
DBE 2015 (P1&P2)	6%	40%	36%	19%	0%	<b>2.68</b>

An overall difficulty score for each paper was determined by assigning a value score as follows:

- Easy questions (EQ) = 1
- Moderate questions (MQ) = 2
- Difficult questions (DQ) = 3
- Very difficult questions (VDQ) = 4

The formula applied to determine the difficulty score is:

Overall difficulty score = (%EQ marks x 1) + (%MQ marks x 2) + (%DQ marks x 3) + (%VDQ marks x 4)

Therefore, the higher the overall difficulty score for a paper, the higher the standard of the paper, with 4 as a maximum. Experience has shown that this is a very useful way of rating the level of challenge of Physical Science papers, and that a rating of between 2,2 and 2,4 is appropriate for a Grade 12 exit-level examination.

The appropriateness of the levels of difficulty of these papers will be commented on in the comparative analysis, as there is no set standard in the CAPS document against which to compare these difficulty values. Hence, the only valid comment can be made in comparison with other papers (see Section 7).

### 1.9.5 Invalid sources of question difficulty or ease

**Table 6 - Number of questions assessed as having invalid sources of difficulty or ease**

Paper	Number of Questions
DBE P1 2013	1
DBE P2 2013	0
DBE P1 2014	0
DBE P2 2014	2
DBE P1 2015	0
DBE P2 2015	1

The following comment provides details of the invalid source of difficulty that was found in the 2015 Paper 2:

- Question 8.4.1: Ambiguous question, it is unclear that the catalyst is being asked for. Requires deep subject knowledge beyond the scope of the learners' knowledge.

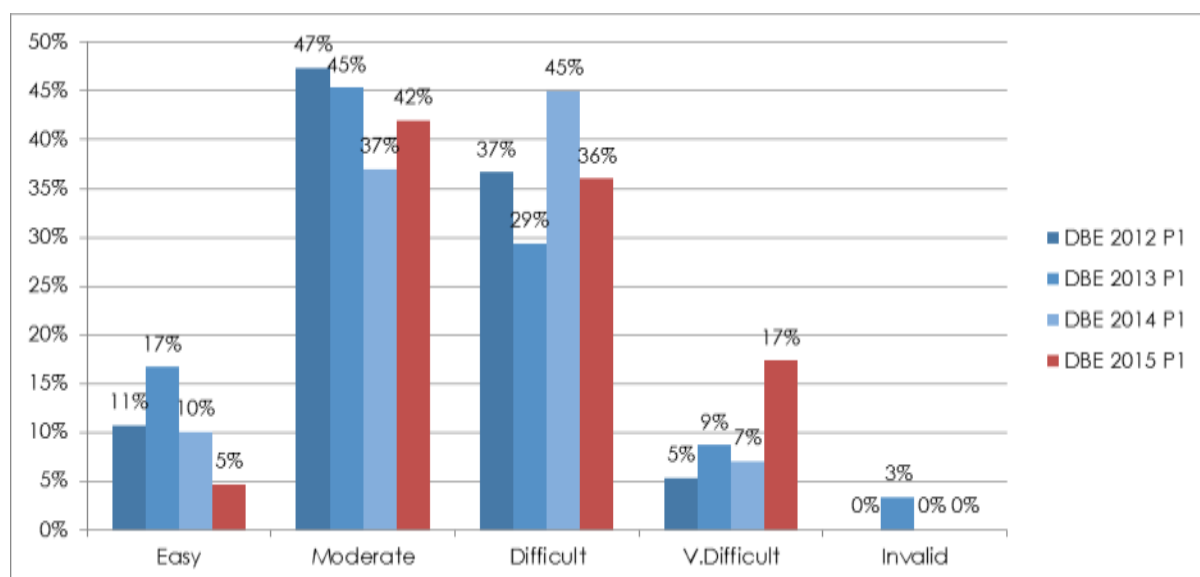
### 1.9.6 Difficulty of stimulus/source material

No issues were found regarding the level of difficulty of the stimuli or source material for any of the papers analysed. Where the stimuli were challenging, this was appropriate to the intention of the question. This issue is not very relevant to Physical Sciences examinations which tend to have limited text.

### 1.9.7 Comparability of examination papers

The results of the examination analysis are shown below for each of the papers, and for the combinations of the papers. We represented the information graphically, as this clearly allows the comparisons to be seen.

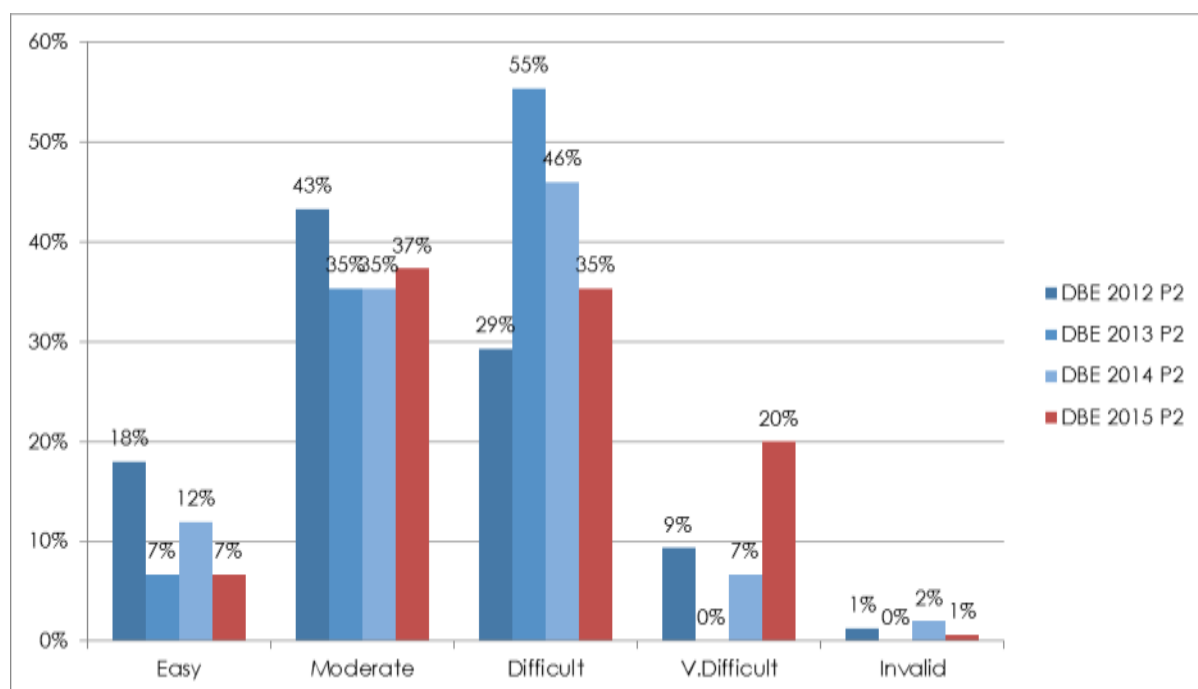
### 1.9.7.1 DBE Paper 1 (Physics) Levels of Difficulty:



Regarding the standard of the 2015 Paper 1:

- The data clearly shows that the 2015 November Paper 1 is more difficult than the 2014 paper. This is evidenced by:
  - The significant increase of “Very Difficult” questions from 7% in 2014 to 17% in 2015
  - The drop in percentage of “Easy” questions from 10% in 2014 to 5% in 2015
- This suggests that learners will experience the Physical Sciences November Paper 1 as more challenging than the 2014 paper, and significantly more challenging than the 2012 and 2013 predecessors.

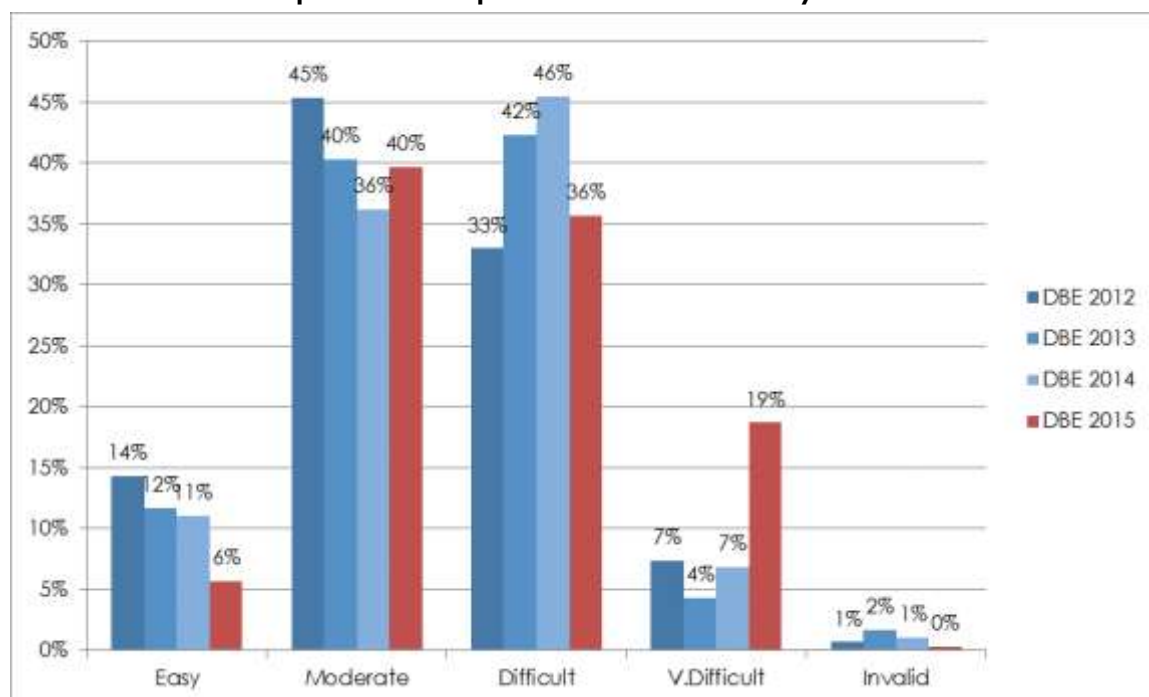
### 1.9.7.2 DBE Paper 2 (Chemistry) Levels of Difficulty:



#### Regarding the standard of the 2015 Paper 2:

- The data clearly shows that the 2015 November Paper 2 is more difficult than the 2014 paper. This is evidenced by:
  - The significant increase of “Very Difficult” questions from 7% in 2014 to 20% in 2015
  - The drop in percentage of “Easy” questions from 12% in 2014 to 7% in 2015
- This suggests that learners will experience the Physical Sciences November Paper 2 as more challenging than the 2014 paper, and significantly more challenging than the 2012 paper.

### 1.9.7.3 Combined Paper 1 and Paper 2: Levels of Difficulty



Regarding the standard of the November Combined Physical Sciences Examination:

- The November exam has a higher overall percentage of “Very Difficult” questions (19% compared with 7% for 2012 and 2014 and 4% for 2013), at the expense of the “Easy” questions.
- In addition, the overall difficulty rating of the 2015 examination was found to be 2.68, which is greater than that for 2014 (2.49) and 2013 (2.40), and significantly greater than that for 2012 (2.33).
- This suggests that learners will experience the combined Physical Sciences November Papers 1 and 2 as more challenging than the 2013 and 2014 examinations, and significantly more challenging than the 2012 examination.
- The evaluation team is of the opinion that the standard of an examination that is attempting to discriminate effectively between learners across the whole range of capabilities should resemble the standard of the 2012 examination. This is supported by the overall difficulty rating of the 2012 examination which was 2.33.

This information is summarized in Table 7 below for the November paper:



<b>Table 7 – Rating the standard of the 2015 paper(s) against each of the other papers</b>		
<b>Paper</b>	<b>2015 November P1</b>	<b>2015 November P2</b>
DBE P1 2012	Significantly more demanding	-
DBE P1 2013	Significantly more demanding	-
DBE P1 2014	More demanding	
DBE P2 2012	-	Significantly more demanding
DBE P2 2013	-	More demanding
DBE P2 2014		More demanding
Combined P1 & P2 2012	November 2015 is significantly more demanding	
Combined P1 & P2 2013	November 2015 is significantly more demanding	
Combined P1 & P2 2014	November 2015 is more demanding	

### 1.9.8 Concluding discussion

The percentage of marks readily available to the 30% passing candidate was determined as follows:

- 100% of the marks in the “Easy” category + 50% of the marks in the “Moderate” category, expressed as a percentage of the overall marks.

The percentage of marks readily available to the 80% candidate was determined as follows:

- 100% of the marks in the “Easy” category + 100% of the marks in the “Moderate” category + 75% of the marks in the “Difficult” category, expressed as a percentage of the overall marks.

Table 8 below reflects these marks for all papers under evaluation:

<b>Table 8 – Marks achievable by sets of candidates</b>		
	<b>Marks achievable by 30% passing candidate</b>	<b>Marks achievable by 80% candidate</b>
<b>Paper 1</b>		

DBE 2012 P1	34.3%	85.5%
DBE 2013 P1	39.3%	84.0%
DBE 2014 P1	28.5%	80.8%
DBE 2015 P1	25.7%	73.7%
<b>Paper 2</b>		
DBE 2012 P2	39.7%	83.3%
DBE 2013 P2	24.3%	83.5%
DBE 2014 P2	29.7%	81.8%
DBE 2015 P2	25.3%	70.5%
<b>Paper 1&amp;2</b>		
DBE 2012	37.0%	84.4%
DBE 2013	31.8%	83.8%
DBE 2014	29.1%	81.3%
DBE 2015	25.5%	72.1%

The following comments are made about these:

- In the 2015 November Paper 1 a lower percentage of marks is accessible to the 30% passing candidate than in 2012, 2013 or 2014. For Paper 2 a lower percentage of marks is accessible to the 30% passing candidate than in 2012 or 2014.
- In both the 2015 November Paper 1 and Paper 2 a lower percentage of marks is readily accessible to the 80% candidate than in 2012 to 2014.
- For the combined papers the 2015 November paper is more difficult for the 30% learner than the 2012 to 2014 papers.
- Similarly, there is a lower percentage of readily available marks for the 80% candidate in the November 2015 papers.

### **1.9.9 Recommendations for improving the quality and standard of the examinations**

The following recommendations are made:

- The current taxonomy given in the CAPS does not allow for discrimination of difficulty levels of questions, and therefore is not a useful tool for guiding the standard of the examination.
- Some guidelines for the acceptable distribution of percentages for the levels of difficulty of the examinations should be established to set a benchmark to guide the examiners on the required standards of a Grade 12 exit level examination. This will ensure a greater continuity in the standard, and allow for the proper discrimination of levels of learner attainment.

# Appendices

## Appendix A: Umalusi examination analysis tool

C1	C2	C3	C4	C5	C7	C8
Item	Marks	Content / topic / skill	Type of cognitive demand (1,2,3,4,OR 5)	Difficulty level (1, 2 3, 4 OR ID)	Identify and list the main source/s of difficulty (Levels 3 or 4) (i.e. Content, Stimulus, Task and/or Expected Response)	Make a note justifying levels 3 or 4 difficulty or Invalid rating. Also make a note here if there are any unresolved differences in ratings and opinions between individual evaluators.
1.1						
1.2						
1.3						
1.4						
1.5						
1.6						
1.7						
1.8						
1.9						
1.10						
1.11						
1.12						
Total						

(Add as many rows as necessary)

## Appendix B: Typology of cognitive demand

Level of cognitive demand	Type of cognitive demand	Explanation of categorization. Question which require students:	Examples
Lower order processes	1. Recognize or recall	To locate, identify and retrieve any kind of <b>explicitly stated</b> information, ideas, facts or details in reading material provided, or from memory of previously learned or read material (for example, names of places), and recognition of the relevance of the information, ideas, facts or details in relation to the question	<p>The contextual questions on Shakespeare's drama Romeo and Juliet:</p> <p><i>Complete the following sentence by filling in the missing words. Write down only the question number and the words.</i></p> <p><i>Juliet sends the Nurse to Friar Lawrence's cell to take Romeo a ... and tell him to come to her that night and say ...</i></p> <p>The comprehension question: <i>Give two reasons why children become overweight. Refer to paragraph 3 (of the given passage).</i></p>
	2. Apply or reorganize	To use or <b>apply a basic procedure</b> (for example, a basic grammatical rule), <b>to replicate a model or version</b> (for example, a basic visual representation, a report, memo, invitation in a highly scaffolded way where students have to recreate rather than create), or to <b>reorganize explicitly stated information</b> , ideas, facts or details from reading material or from memory of previously	<p><i>Rewrite the following sentence in the passive voice starting with the given word: The 18-year-old had developed an illness causing paralysis. Start with: An ...</i></p> <p><i>Rewrite the following sentence so that it is grammatically correct. 'When wearing their apparently sprayed-on outfits, it gives them a false sense of being stylish.'</i></p>

		learned or read material <b>in a different way or form from what was presented</b> (for example, to sort, classify, match, categorize, compare, contrast, summarise or paraphrase, or consolidate <b>explicitly stated</b> information, ideas, facts or details. )	
<b>Medium order processes</b>	<b>3. Infer, interpret or analyse</b>	To engage in <b>more abstract (inferential) reasoning and interpretation</b> , and use conjecture, background knowledge, clues or <b>implicit information</b> , ideas, facts or details in reading material provided or from memory of previously learned or read material as a basis of forming hypotheses, interpreting, inferring or analysing details, relationships or ideas (for example, the significance of a theme, the motivation or nature of a character) which are <b>not explicitly stated</b> in reading or other source material	<p>The contextual questions on Shakespeare's drama <i>Romeo and Juliet</i>: <i>Juliet sends the Nurse to Romeo. What does this show the audience about the relationship between Juliet and the Nurse?</i></p> <p>The question on an extract from the novel <i>Animal Farm</i>: <i>Refer to lines 12–13: 'the animals <u>crept silently</u> away.'</i> <i>What do the underlined words convey about the animals' feelings at this stage of the novel?</i></p>
<b>Higher order processes</b>	<b>4. Evaluate or appreciate</b>	To make critical <b>judgement</b> (for example, on qualities of accuracy, consistency, acceptability, desirability, worth or probability) using criteria provided by other sources or authorities, or students' own values, experiences, or background	<p>The question on a <i>Madam and Eve</i> cartoon: <i>The cartoonist does not show the mother-in-law in any of the frames. Do you think that this is an effective technique? Justify your response.</i></p> <p>The question on an unseen</p>

		<p>knowledge of the subject</p> <p>To show emotional and aesthetic or literary sensitivity or a <b>reaction to the worth</b> of <b>psychological and artistic elements</b> of reading material (including literary techniques, language, forms, styles, and structuring). (For example, commenting on the effectiveness of a poetic device or image).</p>	<p>poem, <i>An Abandoned Bundle</i> by M. O. Mtshali: Discuss how the poet employs <b>diction</b> and <b>imagery</b> to reveal his state of mind to readers.</p>
	<p>5. Synthesise or create</p>	<p>To <b>integrate</b> ideas and information and relate parts of material, ideas, or information to one another and to an overall structure or purpose in a way that is <b>relational</b>.</p> <p>To engage in <b>original creative thought</b> and design and put elements together to form a coherent whole and make a new or <b>unique</b> product <b>showing emotional, aesthetic or literary sensitivity</b></p>	<p>You are selling a second-hand item (e.g. a Walkman, a CD player, an item of clothing). Create an advertisement which will be placed on the notice board at school.</p> <p>Write an essay of between 250 and 300 words titled 'As I looked at that photograph...'</p>

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