Learner flow through patterns in the Western Cape using CEMIS datasets from 2007 to 2019: A longitudinal cohort analysis

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Learner flow through patterns in the Western Cape using CEMIS datasets from 2007 to 2019: A longitudinal cohort analysis[1]

Chris van Wyk[2]

Abstract

The availability of individual learner-unit records allows one to track learners as a group or cohort over a specified period. Longitudinal cohort tracking provides a more complete picture of the progress of learners (dropout and repetition) in the education system. Expanding on the findings of Van Wyk, Gondwe and De Villiers (2017) by using a longitudinal dataset, the aim of this study was to track learners from Grade 1 to Grade 12 as a group or cohort over a longer specified period (2007-2019). This longitudinal data cohort analysis explored how successful learners progressed through the Western Cape public education system and how many eventually dropped out of this system. We used the Central Education Management Information System (CEMIS) datasets from 2007-2019 to create a longitudinal dataset of individual learners. The analysis reveals the importance of unit-level records. With the availability of unit-level learner records, key questions such as: "What is the profile of the learners who dropped out of the system?" or "What is the profile of the learners who progressed without any repetition?" can be answered.

In order to achieve the goals of this study, we first conducted a cross-sectional analysis of the patterns and trends of the flow of learners between 2007 and 2019 in the Western Cape. Thereafter, we conducted a longitudinal cohort analysis of learners to determine progression with or without repetition and who dropped out of the Western Cape public education system.

The findings show considerable repetition in primary school. While most learners progressed through the system without repeating, a relatively high percentage also repeated one or more grades but remained in the system. We also found higher repetition and high dropout in secondary school. These findings contrast with the primary school phase, where lower dropout was evident. A further key finding was a significant decrease of repetition rates since 2015, particularly in Grades 1 and 9, and to a lesser extent in Grades 10 and 11. These findings point to enhanced internal efficiency in the Western Cape public education system over this period.

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Introduction

Expanding on the findings of Van Wyk, Gondwe and De Villiers (2017), this paper used a longitudinal dataset over a longer period (2007-2019) to track learners as a group or cohort from Grade 1 to Grade 12. To determine flows through, in and out of the Western Cape public school system, the current study utilised the individual learner-unit record data available in the Central Education Management Information System (CEMIS) in the Western Cape to track the learners across datasets of different years. This longitudinal data cohort analysis explored how successful learners progressed through the public education system in the Western Cape and how many of them eventually dropped out of this system. For the first time, a long enough data series is available to follow a cohort of learners from the beginning to the end of the school cycle. Learners who were enrolled in Grade 1 in 2007 were followed for 12 years (a school cycle) until 2018 and 1 year thereafter, for some of those who may have repeated, but not if they have repeated more than one year (2019). The availability of such learner-unit record data makes it possible to analyse the flow through patterns in terms of repetition, dropout and progression, which is not possible with aggregated datasets. From the outset, it is important to note that dropping out of this provincial public education system does not necessarily imply dropping out of school, as such learners may have moved to private schools or to other provinces.

A learner cohort is a group of learners who start a specific grade at the same time. To estimate the dropout and repetition rates, we followed individual learners within primary schools, between the primary and secondary phase and then within secondary schools of the basic education sector in the Western Cape. Tracking these cohorts of learners is a useful tool to help administrators to understand trends in dropout and repetition rates in primary and secondary schools in the Western Cape.

In this paper, we first provide a brief explanation of the rationale for focusing on the cohort analysis. Secondly, we describe the longitudinal data coverage. Thereafter we present a brief overview of the selected methods we used to the track learners, and conclude with a discussion of the enrolment patterns in the Western Cape, using learner-unit record datasets.

Creating a Longitudinal Data System

Longitudinal data coverage is a key requirement for tracking individual learners through the education system. This involves creating a dataset that includes information on the same learners from year to year. With unit-level learner records, key questions such as: “What is the profile of the learners who dropped out of the system, or who progressed without any repetition?” can be answered. There is a substantial body of literature that uses longitudinal cohort analysis to understand learner performance and to track learners through the education system (Cunningham, Milam & Statham, 2005; Data Quality Campaign, 2006; Diggle, Heagerty, Liang, and Zeger, 2002; Ewell, Schild & Paulson, 2003; L’Orange, 2008; Voorhees & Lee, 2009).

The Department of Basic Education (DBE) is also moving towards data collection at the learner unit-level through an electronic school administration and management system, the South African School Administration and Management System (SA-SAMS). The SA-SAMS is a comprehensive school administration and management software solution developed, maintained and enhanced by the DBE. The SA-SAMS is an off-line (desktop) system that has

been widely distributed and piloted in all provinces (Department of Basic Education, 2013). However, the Western Cape does not use the SA-SAMS, but rather uses a centralised web-enabled system. The Centralized Education Management Information System (CEMIS) is not a school management and administration system, but it is mainly used as a learner registration and tracking system in the Western Cape.

The main functionality of the CEMIS system is to register learners and to track and monitor individual learners in the province. This includes the registration of learners, transfers between schools, examination passes, etc. Because the system is centrally managed, the WCED has access to the information of each learner in all schools. The CEMIS dataset now enables the WCED, through the longitudinal cohort analysis, to analyse flow through patterns, such as progression of learners through the education system without repetition, repetition by learners who nevertheless remain in the system, and those who drop out of the system. Linking the CEMIS data with the data of Systemic Tests and the National Senior Certificate (NSC) examination will further allow one not only to follow individual learners through the education system, but also to track their performance over time.

CEMIS datasets have been in existence long enough (2007- 2019) to follow individual learners through their whole school career to determine flow through patterns, repetition and dropout, and the learner characteristics that are correlated with these from Grade 1 to Grade 12. Using the provided CEMIS datasets, we linked individual learners by using a common field, the unique identifier, namely the learner's CEMIS number.

Importance of an unique learner identifier

To do the linking, unique identification codes that are consistent and accurate over time must be assigned to every learner. A unique identifier is a single, non-duplicated number that is assigned to, and remains with a learner throughout his or her education career irrespective of whether the learner changes schools. The WCED assigns a CEMIS number for learners that allows them to be tracked as they move from one school year to another. It is then possible through this learner identifier to follow each learner over time, not only within the same school but also across schools or districts within the province to determine:

- progression without repetition
- repetition of learners who nevertheless remain in the system
- dropping out of learners ('dropping out' in this report refers to persons who left the Western Cape public education system).

Data used in this study

The following datasets were used for this study:

- **CEMIS DATA**: 2007 - 2019 individual learner records by grade and school for public ordinary schools. The data of different years were obtained as single datasets which were linked through a common unique field (CEMIS learner ID) to create a longitudinal dataset.
- The **MASTER LIST OF SCHOOLS** with geographic coordinates.

Research Methods

Repetition or retention, as it is often referred to in the literature for developed countries, is defined as the practice of holding children back who have not mastered the curriculum and thus do not meet certain academic standards, while their peers are promoted to the next year (Ndaruhutse, Brannelly, Latham & Penson, 2008). Van der Berg, Wills, Selkirk, Adams and Van

Wyk (2019) referred to the high rate of grade repetition as an "almost unnoticed problem in the South African education system".

Most empirical evidence available on repetition in South Africa comes from annual school surveys and is based on information collected as aggregated data. Further, repetition collected from aggregated data collection processes is mostly under-reported. Particularly in the higher grades, as indicated by Figure 1 about repetition by grade in 2015 in the Western Cape, contrasting the aggregated data with the learner-level CEMIS data.

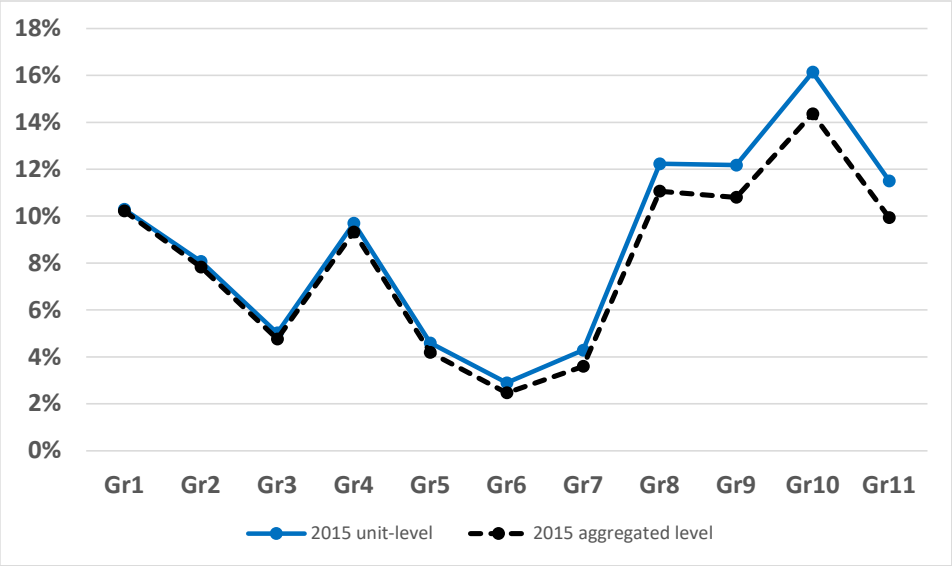


Figure 1: Repetition by grade in 2015 obtained from unit-level and aggregated level data.

The growing literature on repetition (Branson & Lam, 2009; Brophy, 2006; DBE, 2012; Kabay, 2016; Kika & Kotze, 2019; Ndaruhutse, Brannelly, Latham & Penson, 2008; UIS, 2012; Van der Berg, Wills, Selkirk, Adams, Van Wyk, 2019; Van der Berg, Van Wyk, Selkirk, Rich & Deghaye, 2019; Weatherholt, Crouch, Jordan, Healey, Merseth & Eileen Dombrowski, 2018;) and on dropout (Balfanz & Legters, 2004; Gibbs & Heaton, 2013; Jordan, Kostandini & Mykerezi, 2012; Kattan & Székely, 2014; Sabates, Akyeampong, Westbrook & Hunt 2010) is of particular importance for this study. According to the national policies on promotion requirements (DBE, 2012) and admission for public schools (DBE, 1998), a learner may only be retained once in a school phase.

To determine trends in repetition and school dropout in the Western Cape, the following methods were used:

- We conducted a cross-sectional analysis of the CEMIS data to determine trends in the number of learners for whom CEMIS data were available from 2007-2019, by year and grade.
- A longitudinal analysis was undertaken to identify flow through rates by cohort for the period 2007-2019. The following cohorts were identified and followed:
    - Progression of the 2007 grade 1 cohort through the primary school phase from 2007-2013
    - Progression of the 2007 grade 1 cohort through the secondary school phase from 2014-2019
    - Repeaters of the grade 1 cohort of 2007, who were identified as a cohort and tracked over the next 12 years from 2008 to 2019 until they were supposed to reach grade 12, their final year of school.

- The 2007 grade 1 cohort who had repeated at least once by the time they reached grade 4. They were identified as a cohort and tracked over the next 9 years from 2011 to 2019 (Grade 4 to grade 12) until they were supposed to reach grade 12, their final year of school.
- The 2007 grade 1 cohort, who had repeated at least once when they reached grade 9, were identified as a cohort and tracked over the next 4 years from 2016 to 2019 until they were supposed to reach grade 12, their final year of school.

Patterns of Enrolment of Learners recorded in CEMIS in Western Cape Public Schools by Grade and Year

Cross-sectional analysis of CEMIS data (2007-2019)

Table 1 provides a summary of all learners in the public education system in the Western Cape as derived from the CEMIS by grade for the years 2007-2019. Figure 2, based on the data in Table 1, graphically illustrates some enrolment trends in the Western Cape. Although the graph is a series of cross sections (it does not follow the same cohort of learners, but only gives the number of learners in each grade for each year), the overall picture gives a good indication of trends and patterns in the entire education cycle in the Western Cape. The patterns appear to be quite stable, as indicated by Figure 2. During the first part of the education cycle, grade 1 to grade 10, the system seems to be successful in keeping the learners in school. However, there appears to be a high dropout of learners after grade 10 as noted by the steep decline in Figure 2. This is typical of the school system of South Africa: though it is successful in retaining learners in primary school, there are high dropout rates in the secondary phase.

Table 1: Enrolment in the Western Cape for public ordinary schools based on CEMIS data

Year	Gr1	Gr2	Gr3	Gr4	Gr5	Gr6	Gr7	Gr8	Gr9	Gr10	Gr11	Gr12	Total
2007	**92731**	82044	83 606	89 571	78 316	77 633	72 251	66 364	80 474	86 273	61 405	42 921	913 589
2008	91153	**83063**	79 158	85 564	86 849	77 963	75 923	71 497	73 041	79 181	63 933	43 770	911 095
2009	93604	82206	**80 428**	83 233	82 466	85 681	76 357	75 285	79 842	68 616	61 009	44 324	913 051
2010	98180	83134	79 246	**84 374**	80 425	81 525	82 906	75 469	85 260	70 877	54 016	45 082	920 494
2011	100761	85163	79 517	83 451	**80 140**	78 940	77 913	81 399	84 109	73 368	56 753	39 060	920 574
2012	103244	88501	81 362	83 890	79 860	**78 373**	76 410	77 333	90 972	73 015	59 090	43 322	935 372
2013	104607	93464	85 743	85 599	79 177	78 423	**76 209**	75 692	87 334	79 129	56 374	46 321	948 072
2014	106849	97629	89 390	90 619	81 450	76 698	74 729	**76 000**	82 714	75 839	64 620	46 847	963 384
2015	113285	106766	98 735	99 364	88 337	82 827	79 225	79 613	**82 805**	75 795	66 773	57 867	1 031 392
2016	112812	111240	103 550	104 024	93 832	86 523	82 357	82 691	77 109	**80 932**	63 426	54 732	1 053 228
2017	110939	112051	108 785	108 218	98 845	91 818	85 772	85 099	77 340	80 021	**66 355**	53 239	1 078 482
2018	110874	109865	110 214	112 531	102 839	96 769	90 193	88 266	79 328	81 733	66 983	**55 404**	1 104 999
2019	111750	109259	107 484	114 367	107 343	100 127	94 837	93 124	82 285	82 167	67 938	55 085	1 125 766
Increase between 2007 and 2019	19 019	27 215	23 878	24 796	29 027	22 494	22 586	26 760	1 811	- 4 106	6 533	12 164	212 177
% Increase between 2007 and 2019	21%	33%	29%	28%	37%	29%	31%	40%	2%	-5%	11%	28%	23%

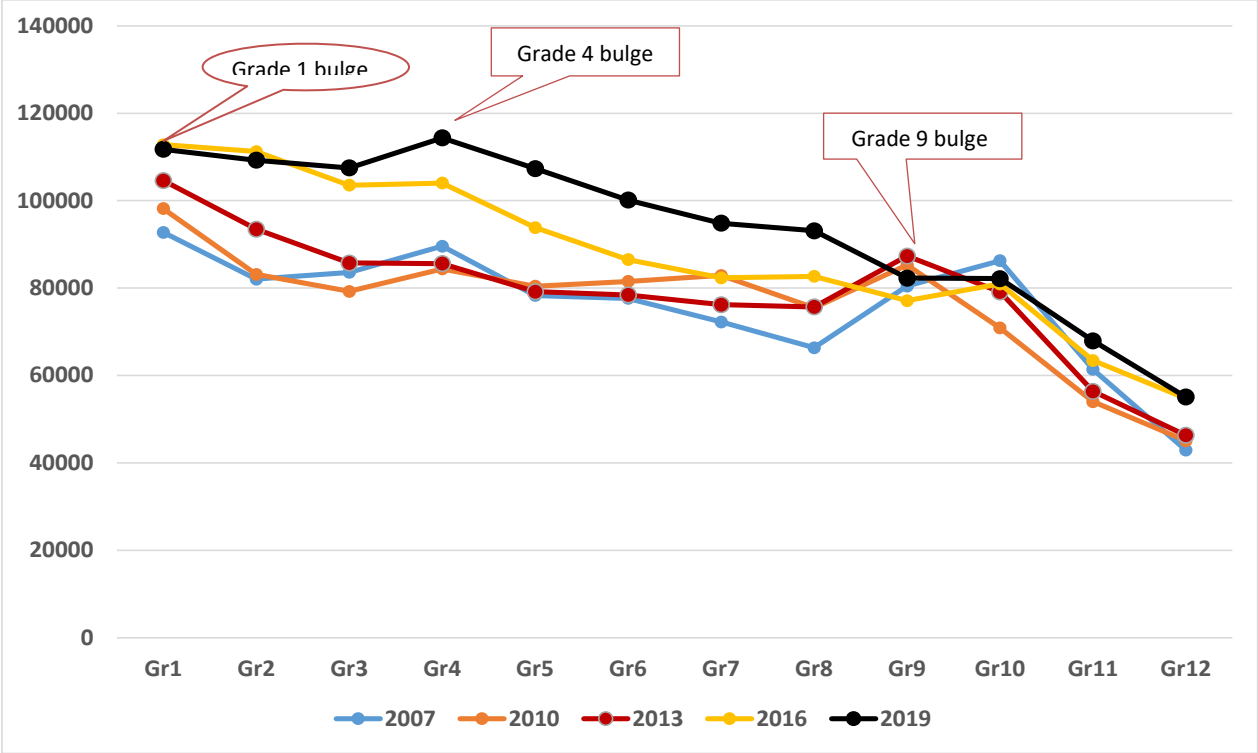


Figure 2: Enrolment in public schools in the Western Cape by grade and specific years

Although Figure 2 does not follow the same learners, i.e. it does not show actual cohorts, the overall picture gives a good indication of trends and patterns in the entire education cycle. It indicates that there is a substantially lower number of learners in grade 2 than in grade 1, implying an enrolment bulge in grade 1. Other enrolment numbers within primary schools remain a fairly consistent proportion of grade 1 enrolment. In comparison with the 92 731 grade 1 learners in 2007, 74 729 (81%) learners were in grade 7 in 2014 and 55 404 (60%) were in grade 12 in 2018 (see Table 1).

Table 1 further shows an increase in enrolment in grade 1 from 92 731 in 2007 to 111 750 in 2019, a growth of 21% over the period of 12 years. The last row in Table 1 indicates the percentage increase between 2007 and 2019 for all grades (refer to Figure 3 for enrolment increase between 2007 and 2019 for all grades). However, as repetition is fairly high for the first grade (see Figure 4), it is important to ascertain if this grade 1 growth (enrolment bulge) was simply a result of repetition in grade 1 or was indeed mainly growth of new entrants. Table 2 shows that after subtracting repeaters from the total grade 1 numbers in a specific year, new entrants to grade 1 increased from 74 939 in 2008 to 101 935 in 2019, an even more rapid actual growth rate of 36%, while the number of repeaters in Grade 1 dropped by almost 40%. This had the consequence that new entrants rose from 82% to 91% of grade 1 enrolment over this period. One of the contributory factors to this may have been the expansion of grade R and pre-school, which may have improved school readiness, but also, partly as a consequence of the expansion of Grade R, there was a decline in under-age enrolment in grade 1 from 24% in 2007 to 1.4% in 2019. More importantly, grade repetition decreased noticeably since 2015. This represents an improvement in internal efficiency which will be discussed in later sections of this paper.

Table 2: Repetition and new entrants in grades 1 and 4 by Year

Years	Total Grade 1 learners	Grade1 Repeaters	New Grade 1 learners	%New Entrants in Grade 1	Total Grade 4 learners	Grade4 Repeaters	New Grade 4 learners	%New Entrants in Grade 4
2008	91 153	16 214	74 939	82%	85 564	6 479	79 085	92%
2009	93 604	16 718	76 886	82%	83 233	7 901	75 332	91%
2010	98 180	17 665	80 515	82%	84 374	7 922	76 452	91%
2011	100 761	19 022	81 739	81%	83 451	8 330	75 121	90%
2012	103 244	19 588	83 656	81%	83 890	8 295	75 595	90%
2013	104 607	16 495	88 112	84%	85 599	8 144	77 455	90%
2014	106 849	15 421	91 428	86%	90 619	9 504	81 115	90%
2015	113 285	12 478	100 807	89%	99 364	10 149	89 215	90%
2016	112 812	11 657	101 155	90%	104 024	9 637	94 387	91%
2017	110 939	10 395	100 544	91%	108 218	9 376	98 842	91%
2018	110 874	9 423	101 451	92%	112 531	8 993	103 538	92%
2019	111 750	9 815	101 935	91%	114 367	9 423	104 944	92%

Another observation from Figure 2 is the consistently higher numbers of learners in grade 4 relative to those in grade 3 for all the years from 2007 to 2019, another enrolment bulge. Overall, there are more learners in grade 4 in any particular year than in grade 3 the previous year (Refer to Table 1 for actual figures). The explanation for this is that grade 4 contains more than one cohort of children as a result of higher repetition (see Figure 4). Table 2 shows that in 2008, 8% of grade 4 enrolment was repeaters, a figure that increased to 10% for a few years before again declining to 8% in 2019. This may be related to policy-driven decisions taken at school level in this grade, the start of the intermediate phase in grade 4, which follows the end of the foundation phase in grade 3. After grade 4, enrolment stabilizes to a large extent up to grade 7, the exit point of the primary school phase.

Figure 3 indicates the enrolment by grade and year 2007 and 2019. The figure presents data for each grade's enrolment around the baseline year (2007) and the enrolment for 2019.

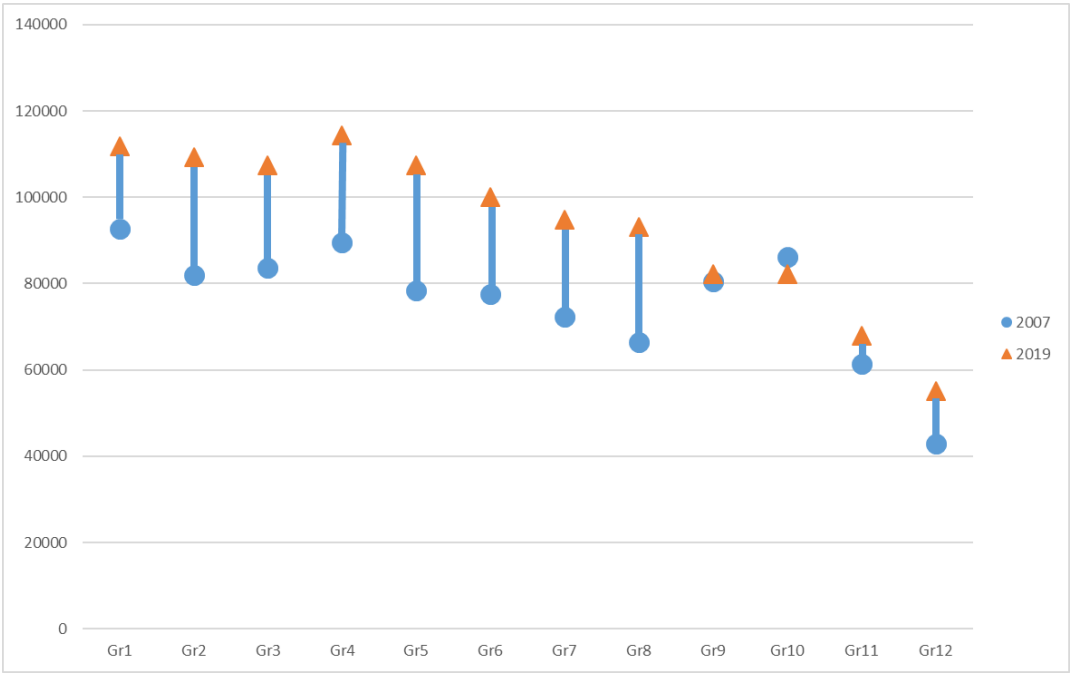


Figure 3: Enrolment by grade and year (2007 and 2019)

Table 1 also indicates that enrolment in the first year of high school (grade 8) is lower than in the last year of primary school (grade 7), although the magnitude of this drop is rather small,

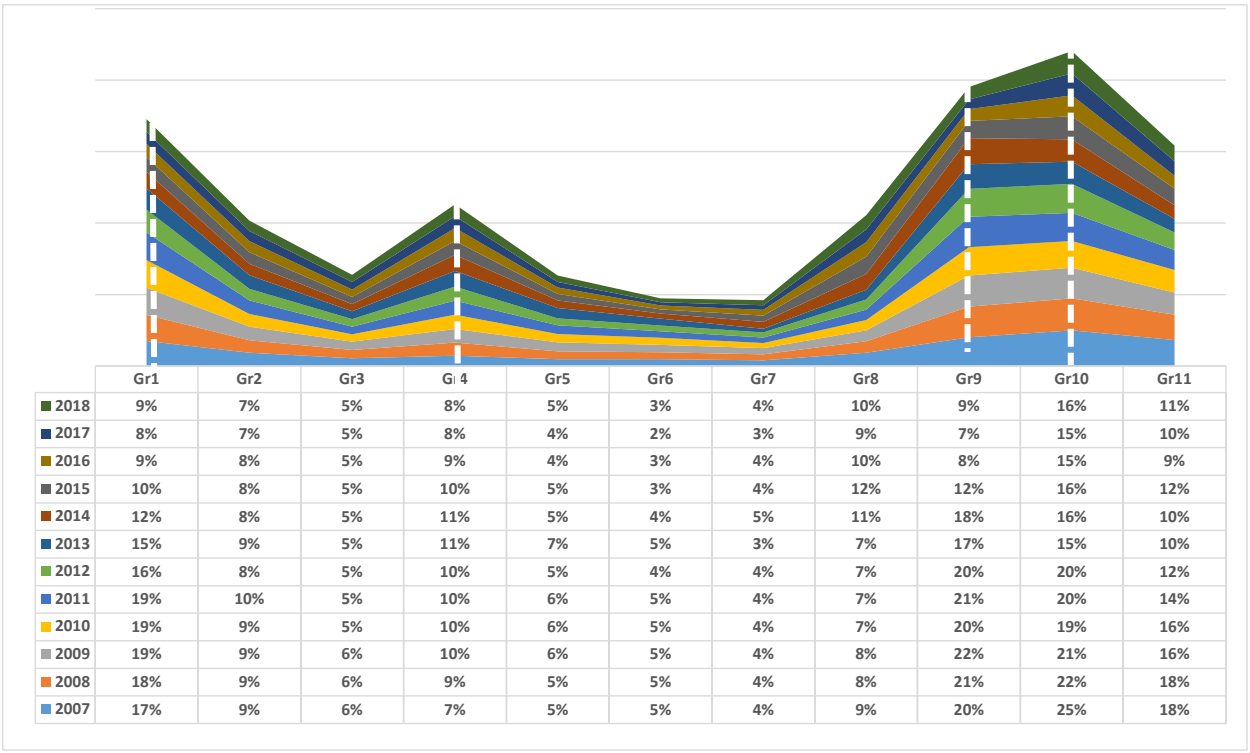
but enrolment numbers increase again between grade 7 and 8 in the latter years. However, between grade 8 and grade 9 the number of learners increases by 11% on average in the first 10 years, with more learners in the system in grade 9 than in grade 8 the previous year. This is again the result of considerable repetition, which is common in grade 9 and was even more so for the earlier cohorts (see 2007 to 2014 for Grade 9 in Figure 4), resulting in another enrolment bulge in grade 9 (see Figure 2). Figure 2 suggests a high dropout of learners from the Western Cape public education system after grade 9. Enrolment in all grades captured in CEMIS, thus including grade 1 to grade 12, pre-grade R, grade R and other grades, increased from 947 697 in 2007 to 1 236 831 in 2019, growth of 31%.

In summary, Table 1 shows that apart from the first two years of the foundation phase in the primary school, the system seems to be successful in keeping learners in school. However, the same cannot be said about the secondary school phase. The number of learners in grade 12 is on average only 60% of enrolment in grade 7.

Figure 4 shows the relatively high repetition in the Western Cape, specifically in grades 1, 4, 9 and 10, showing up as bulges in enrolment in the same grades (grades 1, 4 and 9 and 10). Three of these grades (grades 1, 4 and 10) are also the beginning of a new school phase. This is consistent with a level of dissatisfaction with academic performance of many learners by teachers and principals, that leads to high repetition in the first grade of a school phase, but because children are not supposed to repeat more than once in a phase, the same children cannot be held back again until the beginning of the next phase.

Internal efficiency of an education system reflects the effects of promotion, repetition and drop-out. These flow rates were addressed in the Western Cape through the implementation of special interventions to reduce the failure rates as reported in the provincial Annual Report (WCED, 2013). Figure 4 further indicates a significant decrease of repetition rates since 2015, both in Grades 1 and 9 and to a lesser extent in Grades 10 and 11. This decrease in repetition rates could be ascribed to the positive impact of the strategies implemented by the Western Cape Education Department to improve throughput. In particular, the two grades with the highest repetition rate, Grades 1 and 9, showed a sharp improvement in pass rates (WCED, 2014).

The effect of internal efficiency on the education system as a whole in the Western Cape will be investigated further in the longitudinal cohort analysis section in later sections in this paper. We endeavoured to answer the key question: “Was the improvement because weaker students were allowed to flow through the system by reducing of promotion requirements, or was it the result of the overall improvement of the system?”



	Gr1	Gr2	Gr3	Gr 4	Gr5	Gr6	Gr7	Gr8	Gr9	Gr10	Gr11
2018	9%	7%	5%	8%	5%	3%	4%	10%	9%	16%	11%
2017	8%	7%	5%	8%	4%	2%	3%	9%	7%	15%	10%
2016	9%	8%	5%	9%	4%	3%	4%	10%	8%	15%	9%
2015	10%	8%	5%	10%	5%	3%	4%	12%	12%	16%	12%
2014	12%	8%	5%	11%	5%	4%	5%	11%	18%	16%	10%
2013	15%	9%	5%	11%	7%	5%	3%	7%	17%	15%	10%
2012	16%	8%	5%	10%	5%	4%	4%	7%	20%	20%	12%
2011	19%	10%	5%	10%	6%	5%	4%	7%	21%	20%	14%
2010	19%	9%	5%	10%	6%	5%	4%	7%	20%	19%	16%
2009	19%	9%	6%	10%	6%	5%	4%	8%	22%	21%	16%
2008	18%	9%	6%	9%	5%	5%	4%	8%	21%	22%	18%
2007	17%	9%	6%	7%	5%	5%	4%	9%	20%	25%	18%

Figure 4: Repetition rates in public schools in the Western Cape by grade and year, 2007-2019

Repetition is a serious problem in South Africa, and the Western Cape is no exception. In any given year (2007 to 2019), repetition ranges between 72 000 and 100 000. The considerable repetition rates in grades 1, 4, 9 and 10, as indicated by Figure 4, cause an enrolment bulge. Many researchers recognize a similar issue in various counties.

A study in primary schools in Uganda (Weatherholt, Jordan, Crouch, Barnett and Pressle, 2019) explores the 'over-enrolment' in early grades. They showed that the greatest bulge of 'over-enrolment' takes place in the early primary grades (e.g. Primary 1) in Uganda. The purpose of the study was to examine factors related to over-enrolment in Uganda by investigating what they called "hidden" repetition rates. They find that a reason for the 'over-enrolment' are low official repetition rates as a result of inaccurate reporting of repetition, stating that repetition rates may be higher than reported.

Crouch and Merseth (2017) documented the 'over-enrolment bulge' in grade 1 and (to a lesser but still significant degree) grades 2 and 3. They ascribed this rapid expansion of enrolment to unreported or unacknowledged repetition. They used the term ''churning'' to refer to such unacknowledged repetition. The only logical explanation for this data disconnect is churning: a large number of children enrolling in grade 1 (some of whom are likely under-age), swelling the ranks, remain in grade 1 for approximately two years (many expecting to do so, formally or informally), and then there is churning again in grade 2 (although at a lower rate). Thus, grade 2 enrolment is much lower than grade 1 enrolment, according to them, not because of dropping out but because less churning happens in grade 2.

According to Bashir, Lockheed, Ninan and Tan (2018), education systems in many Sub-Saharan African countries are characterized by swollen enrolments, particularly in grade 1, with much smaller enrolments in the upper-primary grades. They further explained that this "early-grade

bulge" problem is usually attributed to the enrolment of over-age and under-age children in grade 1, high official repetition rates, and high dropout rates between grades 1 and 2.

Figure 5 indicates that the number of grade 1 learners in the Western Cape public school system is steadily increasing over time, despite the fact that the number of repeaters in this grade has declined. Although the reasons are not fully clear – some demographic analysis may be required to know to what extent it is the results of natural population growth and to what extent it is caused by migration – it has important planning implications. Enrolment at higher grades are affected, with a lag, by increases in grade 1 enrolment, but they are also the result of repetition and drop-out patterns as well as possible in-migration of older children into the Western Cape system.

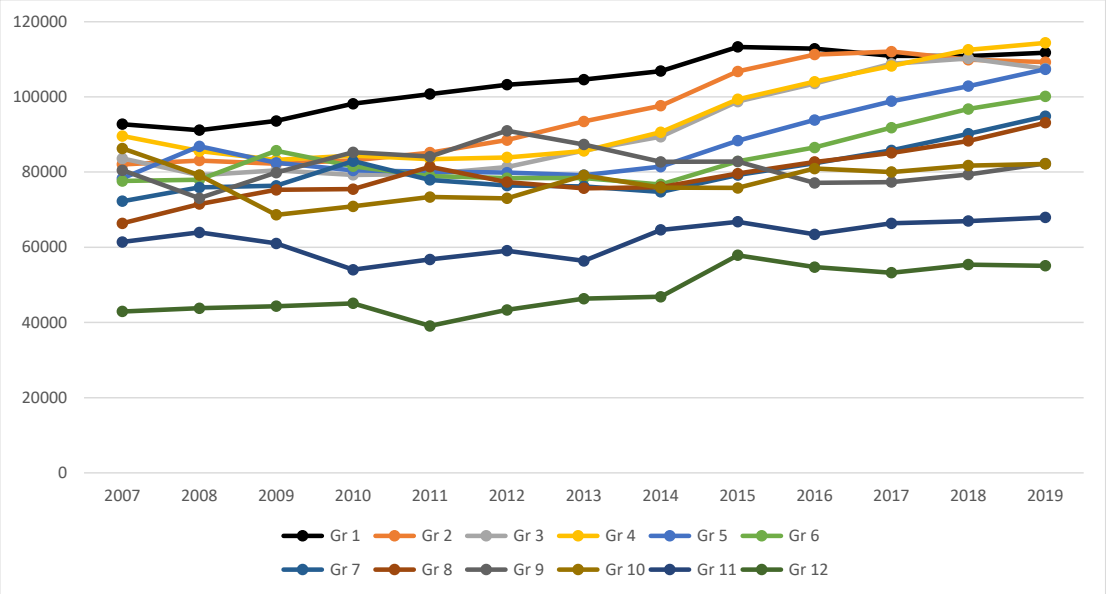


Figure 5: Enrolment in public schools in the Western Cape by year and grade, 2007-2019

Using Pseudo-cohorts in analysing the CEMIS data (2007-2019)

Pseudo-cohorts are artificially created data sets constructed from repeated cross-sections, such as the highlighted diagonal enrolment numbers in Table 1. Although the individual learners in a true cohort will differ from a pseudo-cohort, because of repetition and dropout, the pseudo-cohort provides useful information on enrolment patterns and is representative enough of the full education cycle, particularly when only aggregated data is available, as has been the case when only EMIS data were available. Figure 6, which was created from the data in Table 1, is a presentation of the pseudo-flow of learners (grade 1 in 2007) through to the end of the cycle (grade 12 in 2018).

Figure 6 emphasises the pseudo-progression of learners and shows the high dropout rate between grade 9 and grade 12 in the Western Cape. The enrolment bulge is again clearly visible in grades 1, 4, 9 and 10. It seems that there were more learners in grade 9 in 2011 than learners in grade 8 in 2010, due to the exceptionally high repeater rate in grade 9 for this cohort, as shown in Figure 4, though repetition in this grade has now declined.

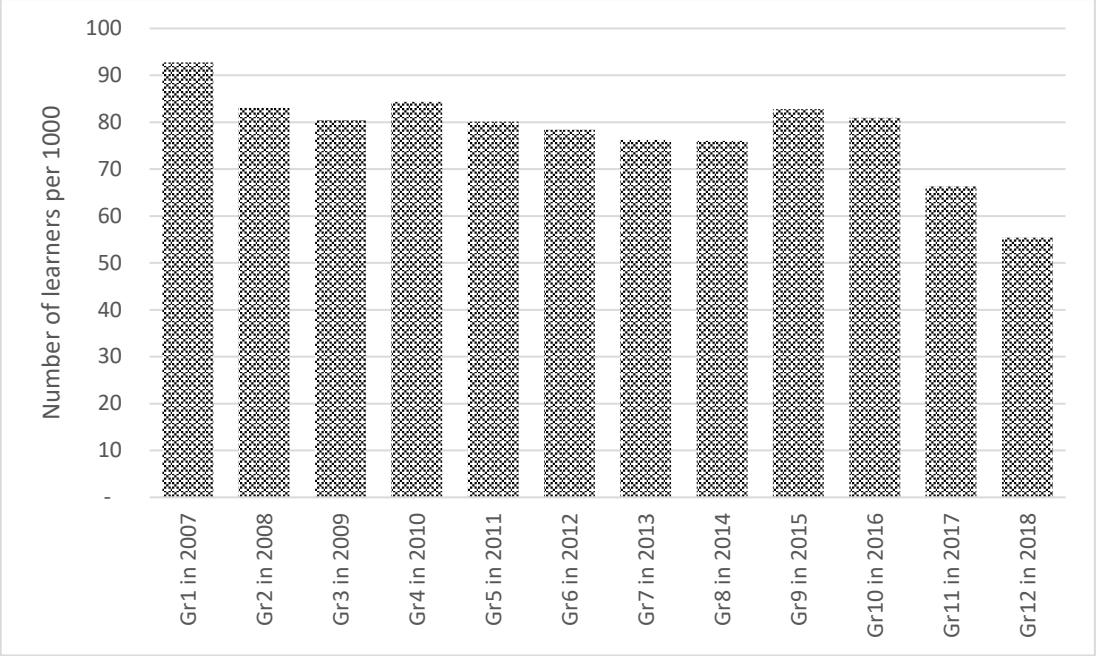


Figure 6: Pseudo grade progression for the 2007 Gr 1 cohort

Pseudo vs actual "on track" grade progression for the 2007 Gr 6 cohort

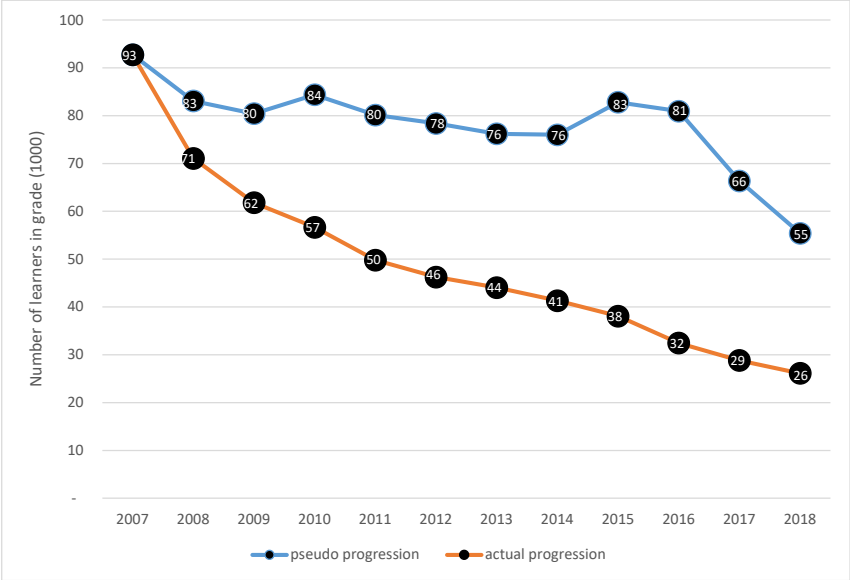


Figure 7: Pseudo vs actual "on track" grade progression for the 2007 grade 1 cohort

Figure 7 indicates that using learner-unit records provides a much better indicator of on-track learners than pseudo-cohort analysis. The figure shows the big difference in on-track learner progression between longitudinal cohort tracking and pseudo-cohort tracking. Longitudinal cohort tracking can provide a more complete picture and true reflection of progress of learners through the grades. Figure 7 shows that when tracking individual learners, only ±26 000 learners of the original cohort reach grade 12 in the appropriate time, in comparison with ±55 000 when pseudo-cohort tracking is used, as indicated in Table 1. The graph clearly shows that longitudinal cohort tracking is a much better method of identifying on-track

learner progress. On-track progression here is defined as learners progressing through the system without repeating a grade and being in the appropriate grade at any given point in time. One of the consequences of repetition, when it is not cancelled by dropout, is that some children become older for their age. For example, the age distribution of the grade 12 learners in 2019 (refer to Table 3) indicates that 64% of learners are in the appropriate grade. Table 4 shows that repetition is the greatest factor contributing to learners being overage – 34% of learners repeated at least once.

Table 3: Age distribution for Grade 12 in 2019

Age	Freq.	Percent	Cum.
14	1	0.0	0.0
15	1	0.0	0.0
16	46	0.1	0.1
17	6559	11.9	12.0
18	28629	52.0	64.0
19	**12025**	21.8	85.8
20	**5212**	9.5	95.3
21	**1881**	3.4	98.7
22	**537**	1.0	99.7
23	**127**	0.2	99.9
24	**42**	0.1	100.0
25	**11**	0.0	100.0
26	**8**	0.0	100.0
27	**1**	0.0	100.0
28	**2**	0.0	100.0
32	**1**	0.0	100.0
35	**1**	0.0	100.0
39	**1**	0.0	100.0
Total	55085		
Overage	19849		
Overage%	36%		

Table 4: Number of times Gr 12 learners of 2019 repeated

Number of times repeated	Freq.	Percent	Cum.
0	36 165	65.7	65.7
1	13 456	24.4	90.1
2	4 519	8.2	98.3
3	860	1.6	99.9
4	79	0.1	100.0
5	5	0.0	100.0
6	1	0.0	100.0
Total	55 085		
Repeaters	18 920		
Repeaters%	34%		

Longitudinal Cohort Analysis

In this section of the paper, the progression of learners in primary school and secondary school is discussed. First, a general picture is presented and then specific sections are devoted to those learners that have been successful in all the grades of a particular school phase, those that have repeated at least once in this phase and those that have dropped out of the Western Cape public education system.

In analysing the progress of learners, grade 1 learners of 2007 were considered as a cohort and tracked through the school system by using the CEMIS data.

Table 7 gives a summary of how these learners progressed through the system. In 2007, 92 731 learners started in grade 1 or repeated that grade. In 2008, 71 069 of those learners were in grade 2, in other words they had progressed successfully, while 16 214 remained in

grade 1, in other words they repeated grade 1 in 2008. In total, 87 357 learners of the 2007 grade 1 cohort were still in the school system. This means that a total of 5374 grade 1 learners had dropped out of the Western Cape public school system between 2007 and 2008. This is a surprisingly large drop-out of the school system and needs further investigation. Table 5, the distribution of grade 1 dropouts by age and quintile, shows that not many of the grade 1 dropouts are under-age. Table 6 shows the total over-age and correct age of new entrant learners of grade 1.

Table 5: Distribution of Grade 1 dropouts by age and quintile in 2007

Age	Q1	Q2	Q3	Q4	Q5	Total
5	4	4	1	1	1	11
6	160	461	320	266	154	1361
7	350	730	544	516	586	2726
8	170	231	180	170	143	894
9	47	61	48	42	11	209
10	18	25	14	8	1	66
11	6	7	7	3	0	23
12	5	6	2	2	0	15
13	3	0	1	0	0	4
14	1	0	0	0	0	1
15	0	0	2	0	0	2
16	0	2	0	1	0	3
Total	**764**	**1527**	**1119**	**1009**	**896**	**5315**
Overage						1217
Overage%						23%

Table 6: Type of Age for new entrants in 2008

Age Type	Freq	Percent	Cum.
correct age	70 284	94	94
overage	4 655	6	100
Total	74 939	100	

The reason for the high drop-out in Grade 1 could be that some of these children initially enrolled and then dropped out of school altogether before returning the next year, but that would imply that the CEMIS numbers allocated to them were not again used when they re-entered and that they were erroneously then recorded as new entrants. Alternatively, a proportion of these children could have transferred to private schools, and some may have moved province. However, there is no obvious reason why this would occur on a bigger scale in grade 1 than in most other grades.

Table 7: Progression of learners that enrolled in grade 1 in 2007 for the period 2007-2019

Grade	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Gr 1	92 731	16 214	514	78	18	3	4	-	1	1	-	2	-
Gr 2	-	71 069	21 749	1 695	145	31	8	-	5	-	-	1	-
Gr 3	-	56	61 795	23 766	2 419	226	29	11	6	1	1	-	-
Gr 4	-	6	74	56 672	27 846	7 815	712	65	20	3	4	14	-
Gr 5	-	-	4	62	49 785	24 559	9 189	1 043	115	22	4	1	1
Gr 6	-	-	1	4	62	46 259	23 670	10 020	1 198	125	19	4	2
Gr 7	-	-	-	2	6	59	44 058	21 348	10 281	2 182	259	24	3
Gr 8	-	-	-	-	2	11	55	41 305	20 498	11 019	3 481	407	43
Gr 9	-	-	-	-	-	1	10	47	38 094	19 268	9 549	3 117	365
Gr 10	-	-	-	-	-	-	-	4	46	32 456	17 833	10 961	4 668
Gr 11	-	-	-	-	-	-	-	-	4	43	28 822	13 816	7 423
Gr 12	-	-	-	-	-	-	-	-	-	3	33	26 133	10 569
Other	-	12	94	202	417	476	454	355	3 758	3 957	3 497	2 298	600
Still in School	92 731	87 357	84 231	82 481	80 700	79 440	78 189	74 198	74 026	69 080	63 502	56 778	23 674
Repeaters	0	16 214	22 263	25 539	30 428	32 634	33 612	32 487	32 124	32 621	31 150	28 347	
Dropout	-	5 374	3 126	1 750	1 781	1 260	1 251	3 991	172	4 946	5 578	6 724	
Cum. Dropout	-	5 374	8 500	10 250	12 031	13 291	14 542	18 533	18 705	23 651	29 229	35 953	

Note:

- **Numbers** below the diagonal indicate errors in the data, i.e. 56 children who were recorded as in grade 1 in 2007 were recorded as being in grade 3 in the next year, and another 6 recorded as in grade 4.
- **Other** refers to the grades such as LSEN unit class, SMH Occup-Oriented Yr, SMH Senior Ph Yr and SOS Yr.

By 2009, 61 795 of the original 2007 grade 1 cohort had successfully progressed to grade 3. Of the 16 214 repeaters in grade 1 in 2008, 514 again repeated grade 1, in contradiction with the repetition policy. In 2009 there were 21 749 of the 2007 grade 1 cohort in grade 2 – they had repeated either grade 1 or grade 2. These could thus be from the 71 069 learners of this cohort who had passed grade 1 who then repeated grade 2, or they could be from the 16 214 repeaters in grade 1 in 2008 who had then passed grade 1 in 2008. A further 3 126 learners had dropped out of the school system, so that the cumulative dropouts for these two years was 8 500. This means that no less than 9.2% of the original 2007 grade 1 cohort had left the Western Cape public school system within two years. The same explanation applies for subsequent years up to 2019.

Progression of the 2007 grade 1 cohort through the primary school phase, 2007-2013

Table 7 shows that by 2013 44 058 learners of the 2007 grade 1 cohort had progressed to grade 7 (end of primary school) without any repetition and were therefore still in their appropriate grade. In 2013 there were 33 612 learners from the 2007 grade 1 cohort still in the system who had repeated one or more times. Of these repeaters, 23 670 were in grade 6, i.e. one year behind, 9 189 were in grade 5 (two years behind), 712 in grade 4 (three years behind), 29 in grade 3 (four years behind) and 8 in grade 2 (five years behind) and 4 still in grade 1 (six years behind). Some of these small numbers who had repeated multiple times likely reflect data errors due to imperfections in the CEMIS number system, although it may also reflect deviations from the repetition policy.

As Table 7 shows, 44 058 of the original grade 1 cohort group in 2007 or 48% of the original cohort had successfully progressed to grade 7 within the normal 7 years, i.e. without ever

repeating. (Even if one ignores those who dropped out in grade 1 and express the grade 7s in 2013 as percentage of grade 1s minus grade 1 dropouts, this ratio still rises to only 50%.) The 33 612 members of the 2007 grade 1 cohort that were still in the system but had repeated at least one grade constitute 36% of the original cohort group. This implies that 84% of the original cohort group of 2007 were still in the school system in 2013. Table 7 shows that 14 542 learners had dropped out of the Western Cape public school system, or 16% - a surprisingly high 'dropout' for primary school, something that needs further investigation. However, this may be a slightly exaggerated figure if some of the 5 374 grade 1's that dropped out were perhaps not real drop-outs out of the system.

Figure 8 is based on the data in Table 7 and shows the progression of the grade 1 cohort of 2007 through the primary school phase for 7 years. It clearly indicates the relatively high repetition in primary school. The majority of learners progressed through the system without repeating, but a surprisingly high proportion had dropped out of this system and a high percentage also repeated one or more grades but remained the system.

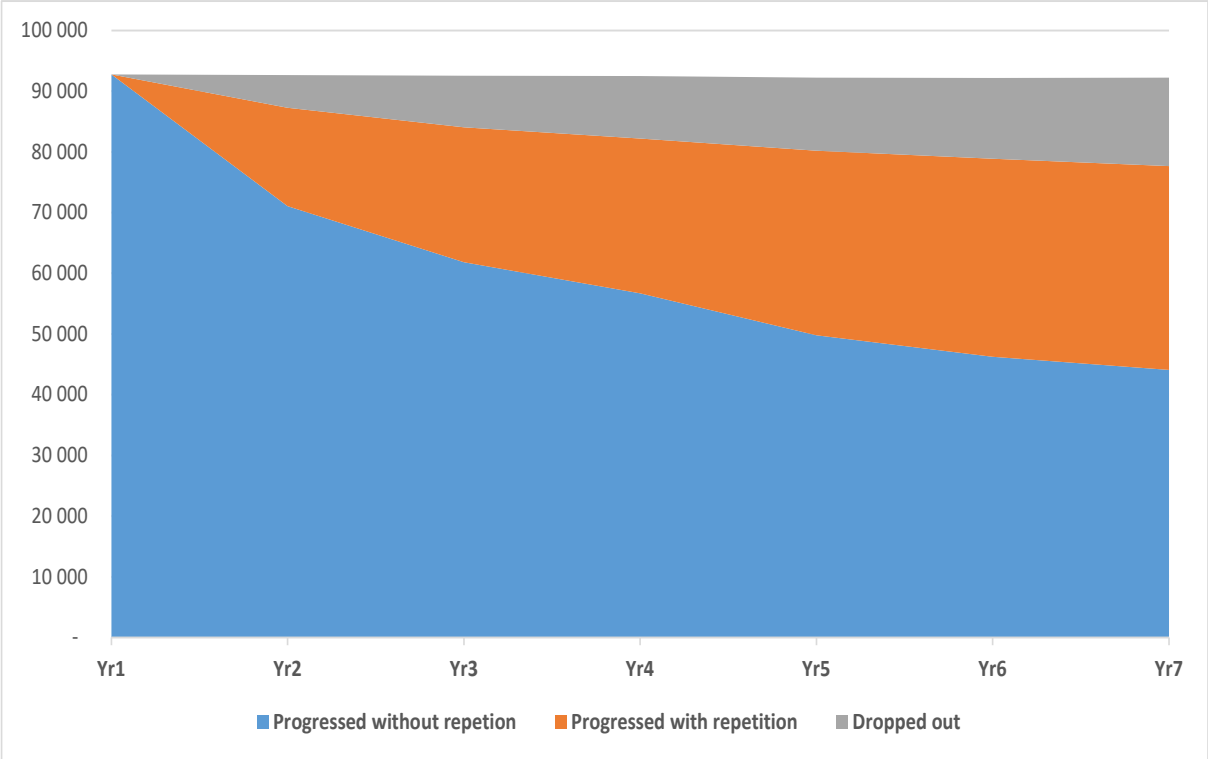


Figure 8: Progress of grade 1 cohort of 2007 until 2013

Enhanced performance and improvement in the primary phase

To investigate the effect of the significant decrease in repetition rates in Grade 1 after 2015, we compared the flow through patterns the 2007 grade 1 cohort with the 2016 grade 1 cohort and observed the following improvements:

- Table 7a shows 16 214 (17%) of 2007 grade 1 cohort repeated, while only 10 395 (9%) of the 2016 grade 1 cohort repeated;

- Table 7a shows that by 2010, 56 672 (61%) learners of the 2007 grade 1 cohort had progressed to grade 4 without any repetition and were therefore still in their appropriate grade, while 81 535 (72%) of the 2016 grade 1 cohort progressed to

grade 4 without repetition – a significant progress in internal efficiency. On-track grade progression, in this instance, is a good indicator of advancement of the system.

- Furthermore, cohort tracking allows researchers and administrators to examine and compare the progress of learners of different cohorts, as indicated in Figure 9. For example, Figure 9 shows the progression of grade 1 learners during a four-year period. In this example, the 2007 grade 1 cohort clearly has a lower on track progression rate. Longitudinal cohort analysis can help an education department to improve their understanding of the actual patterns (dropout and repetition) of learner progression and provides a good indicator of progress in internal efficiency.

Table 7a: Progression of learners that enrolled in grade 1 in 2007 and 2016

grade	2007	2008	2009	2010	grade	2016	2017	2018	2019
Gr 1	92 731	16 214	514	78	Gr 1	112 812	10 395	182	30
Gr 2	-	71 069	21 749	1 695	Gr 2	-	97 818	17 320	343
Gr 3	-	56	61 795	23 766	Gr 3	-	78	88 117	21 683
Gr 4	-	6	74	56 672	Gr 4	-	20	85	81 535

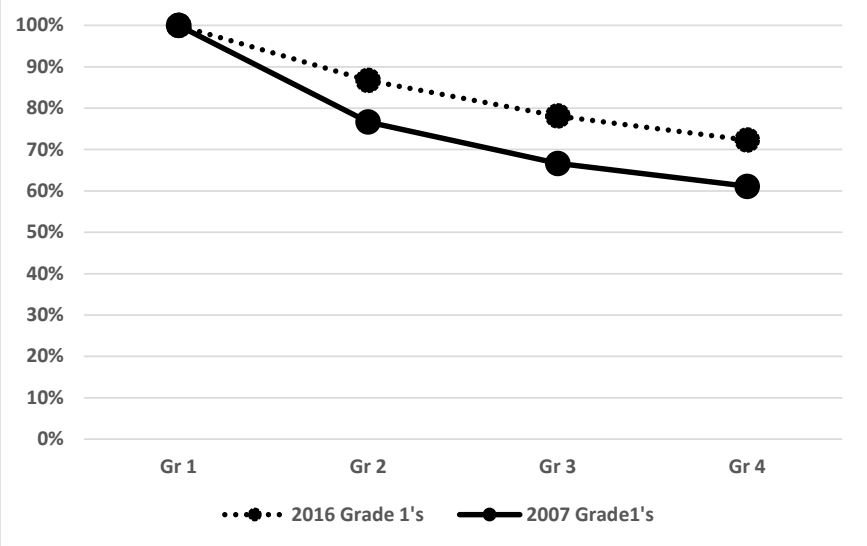


Figure 9: On track progression for the 2007 and 2016 Grade 1 cohorts

Progression of the 2007 grade 1 cohort through the secondary school phase, 2014-2019
Table 7 indicates the progress of the original grade 1 cohort group of 2007 for the next 6 years through the secondary phase until 2019.

As Table 7 shows, 41 305 of the original grade 1 cohort group in 2007 or 45% of the original cohort had successfully progressed to grade 8 (start of the secondary phase) within the normal 7 years, i.e. without ever repeating. The 32 487 learners of the 2007 grade 1 cohort that were still in the system but had repeated at least one grade constituted 35% of the original cohort group. This implies that 80% of the original grade 1 cohort group of 2007 were still in the school system in 2014. Table 7 shows that 18 533 learners had dropped out of the Western Cape public school system, or 20% - as indicated, a surprisingly high 'dropout' during the primary school phase that needs further investigation.

Looking at the full period (12 years), only 26 133 of the 2007 grade 1 cohort or 28% are "on-track" and progressed appropriately to grade 12 without any repetition in 2018. In 2018, there

were 28 347 of this cohort still in the system who had repeated once or more. Of these repeaters, 13 816 were in grade 11, i.e. one year behind, 10 961 were in grade 10, i.e. two years behind, etc. The cumulative number of learners from the 2007 grade 1 cohort that had dropped out of Western Cape public schools by 2018 was 35 953.

Table 7 gives a summary of how the Gr 1 cohort of 2007 learners progressed through the system from 2007 to 2019. Of the 56 778 (61%) still in the system in 2018, 28% progressed without repetition and 31% progressed after repeating once or more and 39% had dropped out of the Western Cape public school system.

Table 7 further indicates that in 2019, 1 year after the usual 12 years that it takes to reach grade 12, 23 674 (26%) of the original Gr 1 cohort of 2007 were still in the system, of which 10 569 were in grade 12 (implying they repeated once).

Enhanced performance and improvement in the secondary phase
As indicated in Figure 4, a significant decrease in repetition rates occurred since 2015. Given the significant decrease of repetition since 2015 in grade 9, flow-through rates of grade 9 learners were further investigated to determine the impact and consequence of these lower repetition rates. Van Wyk, Gondwe and De Villiers (2017), already reported on the progression of grade 9 for 4 cohorts before 2015 (2007, 2008, 2009 and 2010) and indicated that a consistently high number of learners who started Grade 9 repeated that grade the next year. A similar consistency for repetition is seen in the dropout trends: a consistently high dropout rate from Grade 9 through Grade 12 for all cohorts.

To investigate the effect of the significant decrease in repetition rates in Grade 9 after 2015, we compared the flow through patterns of a grade 9 cohort before 2015 (we used the 2010 grade 9 cohort) with a cohort after 2015 (here we used the 2016 grade 9 cohort). We observed the following improvements:

- Table 7b shows 16 920 (20%) of the 2010 grade 9 cohort repeated, while only 6 300 (8%) of the 2016 grade 9 cohort repeated;

- Table 7b shows that by 2010, 34 237 (40%) learners of the 2010 grade 9 cohort had progressed to grade 12 without any repetition and were therefore still in their appropriate grade, while 41 445 (54%) of the 2016 grade 9 cohort progressed to grade 12 without repetition - a significant progress in internal efficiency. On-track grade progression, in this instance is a good indicator of improvement of the system;

- Furthermore, cohort tracking allows researchers and administrators to examine and compare the progress of learners of different cohorts, as indicated in Figure 10. For example, Figure 10 shows the progression of grade 9 learners during a four-year period. In this example, it is clear that the 2010 grade 9 cohort has the lowest on track progression rate – an indication of the progress in internal efficiency, probably as a result of the implementation of intervention strategies by the WCED.

Table 7b: Progression of learners that enrolled in grade 9 in 2010 and 2016

grade	2010	2011	2012	2013	grade	2016	2017	2018	2019
Gr 9	85 260	16 920	4 690	838	Gr 9	77 109	6 300	308	41
Gr 10	-	53 879	16 147	5 499	Gr 10	-	63 464	14 743	2 605
Gr 11	-	41	40 024	11 682	Gr 11	-	38	48 616	13 860
Gr 12	-	5	32	34 237	Gr 12	-	2	30	41 445

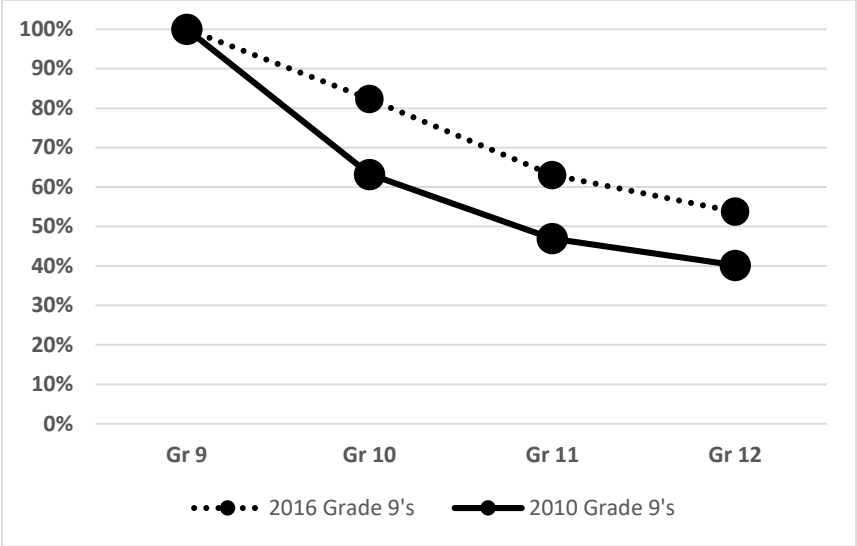


Figure 10: On track progression for the 2010 and 2016 Grade 9 cohorts

Progression of learners that repeated grade 1 in 2007

Table 8 shows the frequency distribution of the repeaters of the grade 1 cohort of 2007. It shows that only 32% did not repeat again before they either dropped out or progressed to the next grade. Table 9 gives a summary of how the grade 1 repeaters of the grade 1 cohort of 2007 progressed through the system.

Table 8: Frequency of repetition of the repeaters of the grade 1 cohort of 2007

Total Repetitions	Frequency	Percent	Cumulative Frequency
1	5218	32.18	32.18
2	6656	41.05	73.23
3	3884	23.95	97.19
4	427	2.63	99.82
5	29	0.18	100
Total	16214		

Table 9: Progression of learners that repeated grade 1 in 2007 for the period 2008-2019

grade	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Gr 1	16 214	388	37	4	1	1	-	1	-	-	1	-
Gr 2	-	14 752	1 342	92	12	2	-	1	-	-	1	-
Gr 3	-	63	13 328	1 839	145	14	5	2	-	-	-	-
Gr 4	-	5	60	12 297	5 509	533	46	14	2	1	6	-
Gr 5	-	-	2	48	8 255	6 079	771	75	12	4	-	-
Gr 6	-	-	-	2	39	7 045	6 299	868	79	11	3	-
Gr 7	-	-	-	-	2	38	6 064	5 542	1 531	192	15	2
Gr 8	-	-	-	-	-	1	37	5 348	4 544	2 127	275	27
Gr 9	-	-	-	-	-	-	1	33	4 052	3 393	1 812	230
Gr 10	-	-	-	-	-	-	-	1	28	3 077	2 992	1 996
Gr 11	-	-	-	-	-	-	-	-	1	26	2 357	1 952
Gr 12	-	-	-	-	-	-	-	-	-	1	21	1 824
Other	-	43	91	197	233	233	223	1 361	1 633	1 533	1 247	433
Still in School	**16 214**	**15 251**	**14 860**	**14 479**	**14 196**	**13 946**	**13 446**	**13 246**	**11 882**	**10 365**	**8 730**	**6 464**
Repeaters	**0**	**388**	**1 379**	**1 935**	**5 667**	**6 629**	**7 121**	**6 503**	**6 168**	**5 728**	**5 728**	**4 207**
Dropout	**-**	**963**	**391**	**381**	**283**	**250**	**500**	**200**	**1 364**	**1 517**	**1 635**	**2 266**
Cum. Dropout	**-**	**963**	**1 354**	**1 735**	**2 018**	**2 268**	**2 768**	**2 968**	**4 332**	**5 849**	**7 484**	**9 750**

Looking at the full period (12 years) of these repeaters who started in grade 1 in 2007 and repeated grade 1 in 2008, only 6 464 or 40% were still in the system in 2019; 9 750 or 60% had dropped out of Western Cape public schools by 2019. Of these learners who were still in the system in 2019, only 1 824 (11%) had progressed to grade 12 in 2019 without any further repetition, while 4 207 had repeated again, 1 952 repeated once more and were in grade 11, i.e. they had fallen two years behind since they started grade 1 in 2007, and 1 996 were in grade 10, i.e. 3 years behind, etc. [3]

Progression of learners who had repeated once by grade 4

Figure 4 (repeaters) shows a relatively high repetition rate in grade 4. Hence, we decided to further investigate the flow-through rates of the learners who enrolled in grade 1 in 2007 and who had repeated once by the time they reached grade 4 (i.e. they were already 1 year behind). Table 10 indicates the progression of these learners who were in grade 4 after 4 years (1 year behind).

[3] As 2007 was the first year of the CEMIS data, some of those enrolled in grade 1 may already have been repeaters. It is thus possible that some who repeated grade 1 in 2008 may have been double repeaters, and therefore the number of years some of them may have repeated by 2019 may actually be an under-estimate

Table 10: Progression of grade 1 cohort of 2007 that repeated once by grade 4 for the period 2011-2019

grade	2011	2012	2013	2014	2015	2016	2017	2018	2019
Gr 4	27 846	5477	90	16	6	0	0	10	0
Gr 5	0	21525	7241	243	27	7	2	0	0
Gr 6	0	1	19050	8302	350	40	6	1	0
Gr 7	0	1	1	16439	8423	1377	71	5	1
Gr 8	0	0	0	1	13118	8438	2636	198	15
Gr 9	0	0	0	0	2	9244	6930	2421	174
Gr 10	0	0	0	0	0	3	6967	6320	3370
Gr 11	0	0	0	0	0	2	2	5214	3856
Gr 12	0	0	0	0	0	0	0	0	4052
Other	0	63	95	84	2032	2276	2060	1436	399
Still in School	**27 846**	**27 067**	**26 477**	**25 085**	**23 958**	**21 387**	**18 674**	**15 605**	**11 867**
Repeaters	**0**	**5 477**	**7 331**	**8 561**	**8 806**	**9 862**	**9 645**	**8 955**	**7416**
Dropout	**-**	**779**	**590**	**1 392**	**1 127**	**2 571**	**2 713**	**3 069**	**3 738**
Cum. Dropout	**-**	**779**	**1 369**	**2 761**	**3 888**	**6 459**	**9 172**	**12 241**	**15 979**

Looking at the period from 2011 to 2019 (grade 4 to grade 12) for these learners, only 11 867 or 43% were still in the system in 2019 and 15 979 or 57% had dropped out of Western Cape public schools. Of those learners still in the system in 2019, only 4 052 (15% of this group tracked from grade 4) had progressed appropriately to grade 12 in 2019 without any further repetition. A further 7 416 of those learners repeated once or multiple times (3 856 repeated once again and were in grade 11, i.e. two years behind since they started grade 1 in 2007, 3 370 were in grade 10, i.e. 3 years behind, etc.).

Progression of learners who had repeated once by grade 9

Figure 2 shows the enrolment bulge in grade 9 because of repetition. Given the high number of learners that failed grade 9, the flow-through rates of these grade 9 learners were further investigated.

Table 11 indicates the progression of learners who were in grade 9 after 9 years (i.e. they had repeated once or were 1 year behind).

Table 11: Progression of grade 1 cohort of 2007 that repeated once by grade 9 for the period 2016-2019

grade	2016	2017	2018	2019
Gr 9	19 268	2506	93	8
Gr 10	0	14681	5643	1027
Gr 11	0	13	9295	4811
Gr 12	0	0	12	6930
Other	0	6	4	5
Still in School	**19 268**	**17 206**	**15 047**	**12 781**
Repeaters	**0**	**2 506**	**5 736**	**5 846**
Dropout	**-**	**2 062**	**2 159**	**2 266**
Cum. Dropout	**-**	**2 062**	**4 221**	**6 487**

These grade 9 learners were tracked over the next four years until they were supposed to reach grade 12, their final year of school. This reveals that only a small percentage of learners who repeated once by the time they reached grade 9 did not thereafter drop out or fall further behind.

Table 11 shows that at the end of a further 4 years, only 12 781 (66%) were still in the system, only 6 930 (36%) were in the appropriate grade (grade 12), i.e. did not repeat again and 6 498 or 34% had dropped out of Western Cape public schools by 2019.

Grade Repetition: Insights from longitudinal cohort analysis

Grade repetition seems to be a precursor to dropping out for most children who fall one year behind their cohort. We tracked the learners for the full education cycle (12 years of schooling) who repeated once or were 1 year behind in grade 1, grade 4 and grade 9. Of those learners that were 1 year behind in grade 1, 60% had dropped out by 2019; of those learners that were 1 year behind in grade 4, 57% had dropped out; and of those that were 1 year behind in grade 9, 34% had dropped out before reaching grade 12. From the above discussion, it is evident that repetition at least once by a certain grade and repetition in earlier grades seem to be an early warning signal for school dropout.

These findings have important implications for policy. Sabates, Hossain and Lewin (2010) identified grade repetition among the predictors for drop out. According to Sabates et al., “grade repetition, after a few years of primary school, may give schools a clear indication for targeting resources towards children who are at risk, in particular if these children are much older than the rest of their classmates”. They recommend that schools should play an important role by first identifying these children, and secondly to implement efforts to prevent such learners from leaving the education system.

An investigation on learner retention in the South African schooling system shows that “grade repetition has been identified as the single most powerful predictor of dropping-out. Studies conducted internationally have revealed that learners who have repeated a grade in their schooling career are most likely to drop out of school” (DBE, 2008).

Many researchers (Branson & Lam, 2009; DBE, Ministerial Committee, 2008; Gibbs & Heaton, 2014; Hares, Minardi & Rossiter, 2020; Jimerson, Anderson & Whipple, 2002; Jimerson, Ferguson, Whipple, Anderson & Dalton, 2002; Liddell & Rae, 2001; Ndaruhutse, Brannelly,

Latham and Penson, 2008; Sabates, Hossain and Lewin, 2010; Stearns, Moller, Blau & Potochnick, 2007; Weatherholt, Jordan, Crouch, Barnett and Pressley, 2019; Pierre, 2009; UNESCO Institute for Statistics, 2012) agree that grade repetition is strongly linked to dropout.

Locating repetition and dropout

Figure 11 shows the percentage of repetition per grade and quintile. It illustrates the gap between advantaged and disadvantaged groups. It shows the high repetition rate in quintile 1 to 3 schools, especially in grades 10 and 11, compared to a low repetition rate of learners in quintile 5 schools. The figure gives a clear indication to policy-makers and government for targeting resources and interventions towards children who are at risk.

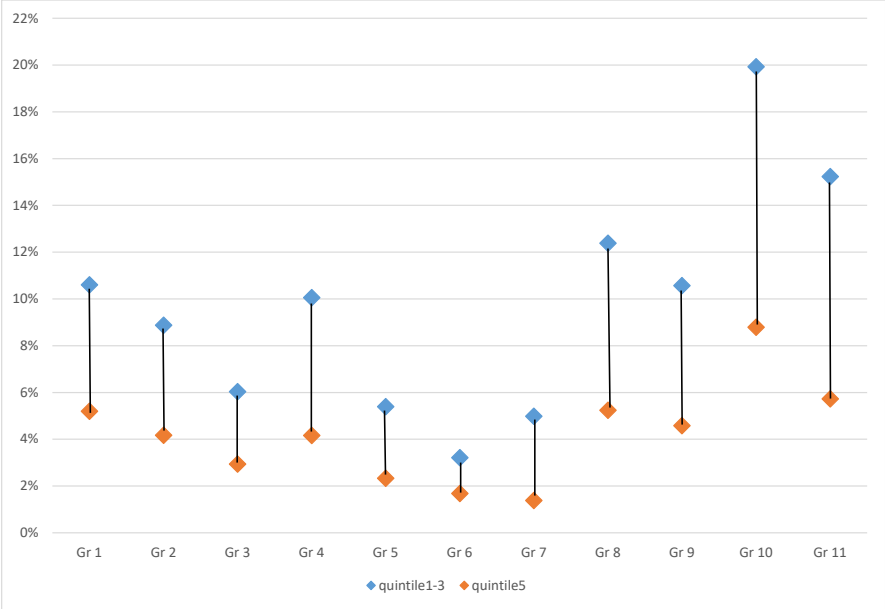


Figure 11: Percentage repetition by grade and quintile in 2018

Conclusions

In this paper, we used cross-sectional analysis and longitudinal cohort analysis to analyse Western Cape education data, focussing mainly on the flow of learners through the public education system. Some important issues were highlighted in the analysis. One issue is the deviations from the prescribed repetition policy, but perhaps more importantly, it appears that grade repetition is a precursor to dropping out of school without completing matric. This is an area that needs some further attention by policy makers. In particular, less strict repetition, or providing remediation to those that repeat could be considered.

Internal efficiency of an education system is revealed by the promotion, repetition and drop-out rates. A key finding in this paper is the significant decrease of repetition, resulting in a seemingly significant enhancement of internal efficiency in the education system.

Considering the findings from this paper, the following recommendations are suggested:

- Further research is necessary to investigate the surprisingly high dropout during the primary phase;
- To investigate and provide further detail on the implementation of the intervention strategies to decrease repetition since 2015.

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