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Curriculum Minute: DCG 0014/2019

To: Deputy Directors-General, Chief Directors, Directors (Head Office and district offices), Heads of sub directorates and sections at Head Office, Heads: Curriculum Support, Heads: Management and Governance, Circuit Managers, FET and GET Coordinators, Subject Advisers and Principals of all ordinary public and independent schools

Subject: National Science Week incorporating Mathematics: 29 July–03 August 2019

1. National Science Week (NSW) is an annual countrywide celebration of Science, Technology, Engineering, Mathematics and Innovation (STEMI). The National Mathematics Week forms part of NSW, an initiative of the Department of Science and Technology (DST). NSW is managed by the South African Agency for Science and Technology Advancement (SAASTA), a business unit of the National Research Foundation (NRF).

2. During NSW there is a special focus on **Science, Technology, Engineering and Mathematics education**. The aim is to make these subjects more attractive, engaging and rewarding for learners and the community at large. Schools are encouraged to highlight the impact of Science, Technology, Engineering and Mathematics in our daily lives and stress the importance of these subjects as the foundation for future careers. NSW is a vehicle to popularise these subjects and to increase public awareness, understanding and the appreciation thereof. The theme for 2019 NSW is "**Facing the harsh realities of climate change**". This theme was identified since South Africa is experiencing severe weather conditions. It therefore provides a platform to integrate natural sciences, the humanities and social sciences through the analysis of the effects of climate change.

3. This year all Western Cape Education Department (WCED) Mathematics, Science and Technology (MST) focus schools (primary and high), all technical, agricultural high schools and all the schools that have entered to participate in the SAASTA Science Debate Competition will participate in compulsory activities planned and sponsored by SAASTA. Each of these schools are requested to nominate two teachers to act as NSW coordinators. These teachers should preferably not be involved in Grades 11–12 academic matters. The attached leaflet from SAASTA provides the information about the National Science Week activities proposed for schools' participation. Most of these activities are planned for and will continue to run until next year's (2020's) NSW. These schools will be supported by the relevant resources from SAASTA.

4. For more information about the NSW, visit the SAASTA website at http://www.saasta.ac.za.

5. In addition, the Western Cape Education Department (WCED) requests all schools to have special activities based on these subjects during NSW and ideally involve learners and parents. The emphasis is on the awareness of Science, Technology, Engineering and Mathematics in our everyday lives, making it fun, exciting and participating in an interactive way.

6. The WCED would like to offer schools the opportunity to collaborate and share their activities with officials and other schools in the province. Schools are encouraged to involve district officials and to take photographs and video clips for possible publication on the WCED's website. These may be given to subject advisers to upload on the home page of the WCED website at http://www.wcedcurriculum.westerncape.gov.za. Other social media, such as Facebook, Twitter and YouTube, may also be considered.

7. The WCED appreciates the extra efforts of teachers to elevate learning and teaching in Science, Technology, Engineering and Mathematics and to make it fun.

SIGNED: PAD BEETS
DEPUTY DIRECTOR-GENERAL: CURRICULUM AND ASSESSMENT MANAGEMENT
DATE: 2019-07-25

science & technology
Department:
Science and Technology
REPUBLIC OF SOUTH AFRICA

National Science Week (NSW) 2019

"Facing the harsh realities of Climate Change"

Schools Participation Plan

1. BACKGROUND:

The Department of Science and Technology (DST) annually leads the National Science Week (NSW) - a celebration of the role of science in people's daily lives. This mass-participation event is one of the many initiatives undertaken to implement the Science Engagement Strategy (2015) of the DST, which seeks to develop a society that is knowledgeable about science, able to form independent opinions about science issues and scientifically literate. The NSW 2019 will take place on 27 July to 3 August 2019 throughout the country under the theme *"Facing the harsh realities of Climate Change"*.

Learners and educators are among the 11 publics targeted by the SES. As a result, the SES Implementation Plan (2017) encompasses the "School-based science engagement initiative" aimed at creating the culture of science in schools, promoting general science awareness among learners and educators, as well as contributing to the development of science, engineering and technology human capital pipeline. Against this background, the NSW 2019 will encompass science activities that complement the

intentions of the School-based science engagement initiative in selected schools. Schools that will host such activities will be selected by the provincial departments of Education, including the participation model to be followed.

Whereas schools are at liberty to conduct any number of activities during the NSW, the four activities presented in the Table below have been selected based on their potential impact on the learners and the post NSW learners' participation opportunities they offer in pursuit of the School-based science engagement initiative.

2. ACTIVITIES FOR SCHOOLS:

	ACTIVITIES	DESCRIPTION
2.1	**Measurement of atmospheric variables**	• *Air temperature measurement:* Air temperature is a measure of how hot or cold the air is. It is the most commonly measured weather. Hence, participating learners will over an extended period daily record temperature reading and construct relevant charts. Schools will be provided with appropriate measuring instruments. Each school will have more than one teams that take the measurements over the period August 2019 to July 2020 and the best team, based on the criteria (explained separately) will be awarded a prize and proceed to the next level of the competition.
		• *Carbon footprint measurement*: Carbon footprint is the total emissions caused by an individual, event, organization, or product, expressed as carbon dioxide equivalent. Greenhouse gases, including carbon dioxide, emitted through land clearance and the production and consumption of food, fuels, manufactured goods, materials, wood, roads, buildings, transportation and other services. Participating learners, through their groups will use the web-based carbon footprint calculator in this regard and access the associated benefits.(related materials will be provided)

2.3	**School Science Debate**	• Each school will run a school science debate that will be facilitated by their educator(s). The school will need to identify two or more teams who will participate in the debate. The primary objective of the debate is to develop research, critical thinking and information literacy skills through researching and debating a scientific topic. It also aims to advance public awareness, appreciation and engagement of science, technology and engineering in South Africa. The teams will debate on the topic on climate change in a unique debating format that includes imbizos and each team will debate from one of four perspectives, namely (1.) application and benefit; (2.) economic; (3.) socio-cultural; and (4.) political. The schools team identified through this school level debate will be able to progress to a district level, provincial and national debate in the following year (2020). (Information pack will be provided to schools) • The topic for the debate is: ***"Science and technology are key to understanding climate change and responding to it. Climate change impacts many aspects of our lives, including health, access to clean water, energy, and food security. How can science and technology be used to respond to the harsh realities of climate change in South Africa?"***
2.4	**Career Awareness**	• *Career Awareness:* A structured programme of activities to expose learners of various age groups / grades to selected content. The activities are distinct and could be done on separate days during NSW. Printed materials for each of the activities will be provided in a resource pack. The activities include exposure to exciting new fields of science, research scientists as role models, templates for bursaries and CVs, and self-help guides.

3. STRUCTURE OF THE SCHOOL SCIENCE DEBATING COMPETITION

The school debate will be structured into the following four sessions:

SESSION 1

Introduction of plenary session discussions (10 min.): The facilitator (educator) of the debate will introduce the topic and remind debaters of the procedure for the debate.

Opening statements (4 min.): All teams will sit in a theatre style formation. One debater from each team will give a speech on the issue under discussion, concentrating on the perspective (EITHER ①Application and Benefit, OR ②Economic, OR ③Socio-cultural, OR ④Political) that has been given to that specific team. This speech will outline his/her team's policy towards the issue at hand, giving possible solutions.

Response statements (3 min.): Debaters will have an opportunity to react to each other's opening statements by making a formal response statement of no longer than one minute each. Each team will be required to make at least one, but up to three, statements. Speakers who deliver opening statements may not deliver response statements.

SESSION 2

Reflection (10 min.): The facilitator (educator) invites all participants to spend the next 10 minutes thinking through and identifying any issue or opportunity related to Session 1.

Re-organising the venue: The facilitator (educator) organises chairs in one large circle of 50. The chairperson indicates the 5 points where participants can gather for mini-imbizos.

Large imbizo: The facilitator (educator) invites participants feeling strong about an issue relating to a topic to deliver an imbizo discussion. Each of them will go to the centre of the circle, write a short description of the topic (typically up to 7 words) on a sheet of paper and announce it to the group. Any participant may call for an issue relating to a topic.

Posting mini-imbizo topics on the time grid: The person who called out the issue or opportunity then posts the paper on the wall, which is mapped out with pre-determined time slots and meeting locations. This wall becomes the agenda for the breakaway sessions to follow.

SESSION 3

Mini-imbizos: Individuals are free to decide which session they want to attend and may switch to another at any time. The chairperson (learner) of the mini-imbizo will be the one who puts the topic forward and he/she has to appoint a scribe to take notes of all issues discussed as well as possible solutions. There will be up to four time slots of 20 minutes each.

SESSION 4

Preparation for closing statements (30 min.): Teams get together again. Teams prepare closing statements. A summary of closing statements must be posted on social media before being delivered.

Closing statements (4 min.): One person of each team gives a closing statement on the same issue that has been addressed in the opening statement. Teams should incorporate new info gathered through the mini-imbizos to strengthen their stance and point out definite solutions to their problem.

Announce winners: The judging panel consisting of two or more educators form the school will announce the winning team

4. RULES OF THE SCHOOL SCIENCE DEBATING COMPETITION AND INCENTIVES

4.1. All debaters must be registered pupils in grade 9 or 10 at a recognised high school in South Africa.

4.2. The contest is restricted to a team of five (5) debaters per team. One team will be selected per school for possible progression to a district and provincial level debate.

4.3. The team members of the previous year's national prize winners (i.e. 1st, 2nd and 3rd) may not re-enter the competition.

4.4. Winning schools may re-enter, however, with different team members.

4.5. Dress code for the debaters is strictly school uniform.

4.6. Debating teams should be at the competition venue 30 minutes before the start of the proceedings. Late arrival may result in a team's disqualification.

4.7. All content presented by the debaters must be original and the debaters' own work.

4.8. Debaters are required to participate in English (at the provincial and national level).

4.9. Competition topics: The educators/facilitators will advise the debaters of the topic in advance (of at least two weeks), whereafter the debaters will be given until the competition to collect their thoughts on the topic and research their position thoroughly.

4.10. The contestants are only allowed to prepare written speeches for the opening statements of both the competition. Response and closing statements are unprepared and will be prepared during the competition.

4.11. Team members are allowed to do research during the competition. At provincial and national level (and where possible at school and district level) teams must upload to social media their final mini-imbizo outcomes remarks during the 2nd round of each contest. Contestants are allowed to use laptops, tablets, smartphones with internet connectivity to conduct research on the topic. Contestants are also allowed to call any expert, scientist or professional to receive information and may do so on the day of the competition but only during session breaks.

4.12. Each district winning team will advance to the provincial competition, and each provincial winning team will advance to the national finals.

4.13. The judging panel's decision is final and no discussion or correspondence will be entered into.