SOUTH AFRICAN
YOUTH WATER PRIZE COMPETITION

GUIDELINE

water & sanitation
Department:
Water and Sanitation
REPUBLIC OF SOUTH AFRICA

2030 NDP

GUIDELINES

SOUTH AFRICAN
YOUTH WATER PRIZE COMPETITION

"EDUCATE A CHILD TO EDUCATE THE NATION"

CONTENTS

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The Department of Water and Sanitation is implementing an education programme called Water and Sanitation Education Programme (WSEP). It is aimed at educating learners about efficient use of water, protection of watersources, health and hygiene for a healthy life, invasive alien species and water safety. It engages learners and educators in various educational projects. Through this programme the young people and their community become ambassadors or the Department. The youth in schools have been identified as the primary target audience because they play a crucial role in changing the mind set of the communities. Hence "Educate a child to educate the Nation". The South African Youth Water Prize (SAYWP) is one of the projects that will assist us in making sure that we achieve this.

These guidelines have been developed in consultation with stakeholders and key players in the water sector, the Education sector and the Department of Science and Technology. The document is designed to assist educators and learners to fully prepare for the SAYWP provincial and national competition. It also includes valuable information on the adjudication and mentoring to ensure that educators, adjudicators and mentors have a common understanding of what is expected of them at each stage of the competition. The appendices include samples of the various forms that educators, adjudicators, principals and parents would have to complete at different stages of the preparations. Also included are contact details of the nationalDWS office and regional coordinators who may be contacted for further information or clarification. We hope you find theguidelines useful in preparing your learners for the forthcoming SAYWP competition.

Yours Sincerely
Xolani Hadebe
Director: Water Use Efficiency

PROPOSED DESIGN BRIEF

THE SOUTH AFRICAN YOUTH WATER PRIZE

SURNAME		**INITIAL**	
SCHOOL & PROVINCE			
PROJECT TITLE			
NAME OF SUPERVISING EDUCTOR			
MENTOR (if available)			
CATEGORY (Tick applicable)	☐ **AWARENESS**	☐ **INVENTION**	

Problem statement

Describe your problem in a short paragraph

Methodology

- What are you going to do?
- What materials do you need?
- Source and cost of material listed?
- What, if anything, will you measure?
- What questions, if any, will you ask?
- How will you assess the measurements or questionnaires?
- How long will it take you to do the work?
- What information sources do you intend using e.g., textbooks, newspaper, internet, library books.

Results

How will you present and distribute your results?

BACKGROUND OF THE SOUTH AFRICAN YOUTH WATER PRIZE COMPETITION

THE SOUTH AFRICAN YOUTH WATER PRIZE

The Department of Water and Sanitation (DWS), in collaboration with the Stockholm Water Foundation (Sweden), coordinates the South African Youth Water Prize (SAYWP) Competition. The competition proceeds at provincial and national level, and then culminates to the Stockholm Junior Water Prize (SJWP). The SJWP is held annually in Stockholm, Sweden, during World Water Week in August. Youth from 35 countries compete for the SJWP.

Objectives of the SAYWP

- To promote the protection of South Africa's natural resources
- To encourage and empower the youth to participate in integrated and community-based water resource management
- To enhance interest of the youth and to expose them to Science and Technology
- To motivate the youth to pursue water management careers

Who can participate in the SAYWP?

- Only Grade 9 to 11 learners in high schools or similar institutions may register for the SAYWP competition.
- Individuals or groups of learners not more than two in number
- Not older than 20 years
- Learners who are innovative and passionate about water and the environment

LEARNERS WHO HAVE A SPECIAL INTEREST IN SCIENCE AND TECHNOLOGY

What are the competitors expected to do?

- dentify problems related to water in their school or community, e.g. water wastage, pollution of water sources (wells, rivers, etc.) water-borne disease, health and hygiene, invasive alien plants, etc.
- Take action (initiate a project, do research and recommend solutions that will solve the problem)

Categories of the SAYWP

- Awareness Category: is a research project on the identified problem, where learners take actionand recommend the solution, recommend the solutions
- Invention Category: is a research project on the identified problem, take action, develop a technical model or invention that can be used to solve the problem identified

PRIZES FOR THE SAYWP COMPETITION

Prizes for Provincial Winners

- 1st prize (to the value of R11 000)
- 2nd prize (to the value of R9 000)
- 3rd prize (to the value of R7 500)

Prizes for National Winners

- 1st prize for overall national winner(s)

A bursary to study at the University of KwaZulu-Natal or the Cape Peninsula University of Technology etc

- Bursary from the Department of Water and Sanitation (DWS) for water resource management related careers
    - ◊ Ticket to Stockholm. Sweden to participate in the Stockholm Junior Water Prize
    - ◊ Prize to the value of R15 000
    - ◊ Subsistence allowance of R10 000 for Sweden (Learners)
    - ◊ Subsistence allowance of R10 000 for Sweden (Educator)
- 2nd prize to the value of R14 000
- 3rd prize to the value of R12 500

NB: Prizes are subject to change on an annual basis (refer to brochure).

VERY IMPORTANT: Overall national winners are responsible for applying for their study and accommodation directly with the Universities. DWS will only be responsible for facilitating the bursaries. Terms and conditions will apply.

Regional coordinators will advise school on their prizes

BUILD UP TO THE NATIONAL COMPETITION

CALENDAR OF SAYWP EVENTS & ACTIVITIES

PROGRAMME FOR NATIONAL COMPETITION

A summary of event and activities that form the build-up process to the SAYWP National competition and Awards is shown below. It is meant to give an idea of what is to happen with each milestone. It should be used to monitor progress of learners' preparations for the competition.

PROGRAMME FOR NATIONAL COMPETITION

Day	Activity
Day 1	Arrival of participants in the afternoon before the National competition 6:00 pm
Day 2	Adjudication and announcement of winners
Day 3	Departure of participants to various destinations on the morning after the National competition

SAYWP - PROJECT FLOW CHART

SAYWP - PROJECT FLOW CHART

ACTIVITY	TIME FRAME	RESPONSIBLE
National Project Database compiled	On going	National & Regions
Establish Provincial Adjudication Panel	December-January	Regions
Provincial Competion	April	Regions
Submit Projects to National Office	April	Regions
Establish National Panel	May	National Office
National Competition	May	National Office
Announce Winners	June	National Office
Send project to Stockholm	June	National Office
Prepare for Stockholm	June-August	National Office Winning Region and Nat. Winners
Stockholm Junior Prize Winner	August	National Winners and National Office
Report	September	National Office

GENERAL COMPETITION RULES

All competitors are bound by the rules and regulations below.

- Only Grade 9 to 11 learners in high schools or similar institutions may register for the SAYWP competition.
- Individuals or a group of not more than two learners may enter.
- The age limit for learners allowed to compete is strictly 20 years.
- The organisers reserve the right to verify the grade and age of the learners who register for the competition.
- A school may participate in both categories namely; Awareness Creation and Invention/Innovation
- **A school is allowed to register only one project per category.**
- Learners are required to present their own work for adjudication.
- Learners must present in English.
- Portfolios must be written in English.

VERY IMPORTANT: All schools must submit project portfolios and products at the time stipulated by the organisers. Details on project portfolios are described on Page 20 of these Guidelines. Project

- Learners must be prepared to answer any questions from adjudicators.
- Previous overall national winners are not allowed to participate in the subsequent competition.
- Educators and mentors are not allowed to be adjudicators.
- The SAYWP competition is not open to immediate family members of the adjudicators, mentors or the organising team.

VERY IMPORTANT: The decision of the organisers or adjudicators shall be final and binding.

AWARENESS CREATION AND MOBILISATION

AWARENESS CREATION AND MOBILISATION

The aim of this phase is to encourage more schools to participate in the South African Youth Prize competition. Awareness creation and Mobilisation include the following strategies:

- Distribution of brochures through district offices of the Department of Education (DoE) and DWS.
- Media campaigns via print and electronic media (radio and television)
- Following up with schools, and coordinating feedback by the Regional and National DWS offices.

REGISTRATION

PREPARATIONS FOR PARTICIPATION

- Participating schools must complete the registration forms for competition obtainable from the DoE or
- DWS district or provincial offices.
- The school may enter for both the Awareness Creation and Invention/Innovation categories.
- Completed forms must be posted or faxed to DWS offices (Refer to competition brochures for details).
- DWS will forward acknowledgement letters and SAYWP guidelines to educators in schools registered for the competition.
- Educators should use the guidelines to assist learners in preparing their projects.

VERY IMPORTANT: All participating schools are entered in a national database coordinated by the DWS National Office.

PROJECT DEVELOPMENT

SUBMISSION OF PROJECT PORTFOLIOS

All participants must submit project portfolios to the Regional Coordinator's office prior to provincial and national competition. These must include all information relating to the project undertaken. The information may be in the form of photographs, design sketches, posters, etc. Where the solution is a physical product, it also must be submitted with the portfolio. If the product is too big to be moved, video material, photographs or a model must be submitted.

The portfolio must include a written project report and a project display, which must meet the following requirements:

THE WRITTEN PROJECT REPORT

- A report written in English.
- The report must be typed in 12 point (or more, but not less), using Times New Roman font.

Use IV2 spacing, and provide adequate margins - at least 2cm top and bottom, and 1,5cm at the sides.

- All pages (excluding the title page) must be numbered.
- Together with the figures, photographs, tables and annexures, the report must not exceed 15 A4-size pages.
- You must submit the report in both electronic and hard copy.
- The report must be divided into the following sections:
  - ◊ Title page*
  - ◊ Preliminary matters**
  - ◊ Introduction***
  - ◊ Materials and methods
  - ◊ Results
  - ◊ Discussion
  - ◊ Conclusions
  - ◊ References
  - ◊ Annexure

Title page*

You may design the title page of your report as you wish, but it must contain the following information in an easy to read format:

"South African Youth Water Prize; year; your project title; learner's/learners' name (s) and province"

Preliminary Matters**

This refers to the pages between the title page and the first page of your main report. These pages should provide the following information:

1 A summary of your project (No more than one page);
2 Table of content (Listing every section and sub-section);
3 List of abbreviations and acronyms that you have used in your report;
4 Acknowledgements; and
5 A short biography of the learners, the school and the community they come from.

The Project Display***

- All learners must produce two (2) project posters, each maximum sized 96 cm (wide) X 200 cm (high), or one poster according to Stockholm specification.
- The display may include other demonstration material.

The portfolio must also contain the following:

- Valid South African Birth Certificate(s), unabridged certificates or Identity Document(s).
- Background information of the school (School Profile)

SUPPORT TO SCHOOLS

WORKSHOPS FOR EDUCATORS, ADJUDICATORS AND MENTORS

Support is provided in order to prepare educators, adjudicators and mentors for the SAYWP competition. This is in order to have a common understanding of what is required of them.

Mentors are specialists or people with experience in a field that the learners are undertaking their projects. Their role is to offer professional advice to the learners as they undertake their projects.

Adjudicators are specialists in related science and technology fields who form adjudication panels responsible for assessing and selecting the best projects at provincial and national level.

A series of capacity building workshops will be organised to ensure that the adjudicators and the mentors have a common understanding in assessing and coaching respectively. The mentors will be specifically trained to assist the educators in their preparation of the learners. The workshop schedule is prepared annually in consultation with the DWS regional coordinators.

COMPETITION

PROVINCIAL COMPETITION

The aim of provincial competition is to select a provincial winner who will represent each province in the national competition.

The role of the educator is to support the learners in preparing for the competition, and it includes

the following:

- Submitting project portfolios and products to the regional coordinator's office, at the time stipulated by the organisers (Refer to page 20 for contents of the portfolio).
- Fully preparing the learners for the provincial competition.
- Arranging transport for the learners to the venue of provincial competition.

NATIONAL COMPETITION

The National competition is used to select the overall winners who will represent South Africa in the Stockholm Junior Water Prize competition, which take place in Stockholm, Sweden, during World Water Week in August & September every year. On the basis of the comments or recommendations made by the panel after the provincial competition, it may be necessary for finalists to further refine their projects in preparation for the national competition. The DWS national coordinator will assist in this regard. Educators must ensure that the learners continue with preparations for the national competition.

PRESENTATION OF PROJECTS

Presentation of projects to adjudicators is **allocated 15 minutes**. It is critical for the learners to stick to allocated time in order to avoid losing marks. They must rehearse their presentation thoroughly before the competition. If entering as a group, all members of the project team may present their part in the project. It is critical that each section is well- rehearsed and timed. Learners must use time wisely and repetition must be avoided.

THE INTERNATIONAL COMPETITION

The Stockholm Junior Water Prize is an international contest that is held annually in Stockholm, Sweden, during World Water Week in August. National winners from the different countries are invited to Stockholm for one week.

During the competition, The Nomination Committee visits each poster display to discuss the project and to interview the participants. All participants should be willing to discuss their project with researchers, politicians and media.

The Prize

The Stockholm Junior Water Prize winner(s) receive(s):

- Winner 15.000 USD
- Winners school 5.000 USD
- Diploma of Excellence 3.000 USD

The Judging Criteria

The international nominating committee will judge the learners according to the following criteria:

- Relevance.
- Creative ability.
- Methodology.
- Subject Knowledge.
- Practical Skills.
- Report & Presentation.

The International Nominating Committee

The International Nominating Committee includes experts within the water field and will be responsible for choosing the winner of the international Stockholm Junior Water Prize. Their decision is based on the written report and on a short presentation.

DEFINITION OF ROLES

ROLE OF THE EDUCATOR IN SAYWP

- Ensure that registration of their schools is done accordingly.
- Ensure that documents such as brochures and guidelines are available in their schools.
- Prepare learners for the competition.
- Arrange transport to competition venues.
- Submit project portfolios, products and indemnity forms for each learner or team at provincial level to the regional coordinator on the dates specified by the Regional Coordinators.
- Take full responsibility for the learners at all times during the competition.
- Liaise with regional coordinators in arranging accommodation and catering for participants at the national competition.
- Ensure that the learners are well -prepared at all levels of the competition.
- Ensure that permission is obtained from principals and district managers for learners to participate in the competition.
- Ensure that learners arrive at the venue on the dates specified by the organisers.

ROLE OF THE EDUCATOR IN PROJECTS

Educators have an equally important role to play in preparing learners for the competition as they have in preparing them for examinations. However, in a problem-solving environment their role should be mainly to do the following:

- Motivate learners throughout their projects (It can be difficult for learners to maintain the momentum and enthusiasm especially when the project is not yielding the expected results);
- Show support to the learners in the development of their projects;
- Facilitate acquisition of required resources including any reference information, which the learners would need for their projects (This is critical for ensuring that a project is completed according to plan. It is also important in keeping the project team motivated);
- Point the learners in the right direction as they search for necessary information (This could include reference to a library, suppliers, experts and reference materials);
- Ensure that plans are followed in delivering the projects by monitoring progress on a regular basis; and
- Act as a sounding board for the learners (this could be at the brainstorming stage of the project - refer to page 60 for details on brainstorming techniques).

ROLE OF REGIONAL COORDINATORS IN PREPARATIONS

- Ensuring that acknowledgement letters are sent to participating schools.
- Ensuring that SAYWP guidelines are sent to participating schools.
- Establishing the provincial adjudication panels.
- Arranging workshops for adjudicators, educators and mentors in liaison with Project Coordinator based in the DWS National Office.
- Communicating with educators and learners on matters relating to competition.
- Overseeing logistics relating to the competition including catering.
- Liaising with schools participating in the provincial competition (NB: Schools are expected to arrange and pay for their transport to provincial competition).
- Arranging transport and accommodation for provincial winners and educators participating in the National SAYWP competition.
- Ensuring that participating schools submit learners' project portfolio, products and indemnity forms on dates specified by the National DWS Office.
- Preparing progress reports for submission to the National Office.

VERY IMPORTANT: No projects or modifications will be accepted after the deadlines.

ROLE OF NATIONAL DWS OFFICE IN THE PREPARATIONS

DWS shall support competition at all levels through a National Project Coordinator, tasked with the following:

- Creating awareness of the SAYWP.
- Compiling database of all participating schools.
- Compiling database of winners at all levels.
- Coordination of the National competition and Award ceremony.
- Maintaining constant communication with the Regional coordinators.
- Establishing national adjudication panels.
- Ensuring that schools have the necessary information to aid preparation for the national competition and Awards.
- Arranging and coordinating prizes for the national winners.
- Overseeing mobilisation of sponsorship for the national competition.

ADJUDICATION

ADJUDICATION PANELS FOR SAYWP COMPETITION

The adjudication panels will be established at provincial and national levels. The panels shall be responsible for the selection of provincial and national winners. They shall be composed of representatives from the following:

- Tertiary institutions
- Department of Education (DoE)
- Department of Water Affairs (DWA)
- Department of Science and Technology (DST)
- Department of Environmental Affairs (DEA)
- Council for Scientific and Industrial Research (CSIR)
- Water Research Council (WRC)
- WESSA
- Eskom Expo for Young Scientists
- Intellectual Property Right Experts

Adjudication criteria for Awareness Creation and Innovation/Invention

The adjudication criteria for each category embrace the critical developmental and learning outcomes of the product development process in order:

- To provide a common understanding of what the adjudicators will be assessing;
- to provide the adjudicators with a uniform interpretation of the criteria;
- to avoid undue conflict between criteria and the scoring; and
- to give educators, mentors and adjudicators an idea of what is assessed in the projects (This is in order to know where to give more emphasis during the preparatory stage of the learners, based on the weighting of scores).

The SAYWP categories namely "Awareness Creation and Innovation" have a lot in common in terms of adjudication criteria. More details on Awareness creation and Innovation/invention are contained on pages 75,76, 77 and 78 of these guidelines. However, it is important for learners to consider the detailed criteria below during preparations for the competition. This will help to ensure that learners gain more knowledge on the important aspects of developing products for either category. SAYWP is not only about competing but also about preparing learners for the real world.

Criteria for assessing Awareness Creation Projects

Problem definition

- Statement of the problem
- Evidence of background research
- Statement of requirements

Originality of solution

- Product is an innovation or novelty (original)
- Creativity in developing the solution
- Appropriateness of solution to targeted users/market

Practicality of Solution

- Solution actually works accordingly
- Solution does solve the problem
- Solution fits in with specifications

Subject knowledge

- Clear application of science and technology knowledge
- Appropriateness of knowledge to level of learncr(s)
- Suitability of knowledge to solution

Methodology used to generate solution

- Suitability of techniques
- Consideration of other methods
- Consideration of target user/market

Presentation

- Appropriateness of medium for presentation
- Clarity of presentation
- Time management

Criteria for assessing Innovation/Invention

Problem definition

- Clear statement of the problem
- Evidence of background research
- Statement of requirements (Design Brief)

Originality of Solution/product

- Product is an innovation or novelty (original)
- Creativity in developing the solution
- Appropriateness of solution to targeted users/market

Functionality of Solution/product

- Solution actually works well
- Solution does solve the problem
- Solution fits in with specifications

Subject Knowledge

- Application of science and technology knowledge
- Appropriateness of knowledge to level of leamer(s)
- Suitability of knowledge to solution

Realisation/Construction of product

- Level of skill
- Appropriateness of materials, e.g. strength, rigidity, colour, durability
- Simplicity of production process
- Use of readily available materials
- Safety of the product
- Cost considerations of overall product
- Appearance, i.e. shape, form and finish on product

Subject knowledge

- Clear application of science and technology knowledge
- Appropriateness of knowledge to level of learner(s)
- Suitability of knowledge to solution

Presentation

- Appropriateness of medium for presentation
- Clarity of presentation
- Time management

MODERATION OF SCORES

The process of moderating the scoring is also critical to ensuring that the adjudication is fair and justified. There are times when adjudicators need to discuss certain scores after adjudication. This exercise is always preceded by an audit exercise, which is used to verify the scoring of the adjudicators. It also picks certain irregularities in the adjudication process, which are then brought to the attention of the adjudicators for moderation. Samples of a score sheet and audit form are included in page 57 of these guidelines.

TECHNICAL INFORMATION

PROJECT STRATEGIES

Given that the South African Youth Prize competition engage learners in projects, it is crucial that they understand the project strategies described in this section. These include basics on project management, design process and the research process. Project management is important in helping the learners to deliver the projects accordingly. The design process will help those involved in awareness creation, invention or innovation in order to consider all the necessary aspects. The research process is critical in helping the learners to identify the problems they intend to solve. Above all, these strategies would be useful to the learners as they progress with their studies or enter the world of employment. This section therefore shares strategies aimed to improve learners' approach to science and technology projects. It is written for educators and mentors who may not be familiar with basics of project management, design processes or research. It provides some advice that would assist them in preparing learners for SAYWP.

BASICS ON PROJECT MANAGEMENT

What is a Project?

A project is a temporary endeavour undertaken to create a unique product or service. It can take days, weeks, months or even years to complete a project. Typical projects include the engineering, construction, research, design, etc. Equally, preparing for a wedding ceremony or a wedding can be projects in themselves. Every project has a 'Start and a Finish' which determine its duration. It also has milestones, tasks, activities, budget, timelines and deliverables. It is important for learners to consider all these when embarking on their projects. It is also valuable knowledge that they will need later in life.

Requirements of a Project

Every project requires a project manager who is responsible for providing leadership and ensuring that the project is delivered according to the agreed time, budget and resources. A project also needs to have a project team in which each member has a clear role to play. It must also have a clear plan with reasonable timelines and deliverables.

Role of a Project Manager

- Maintain the progress and productive mutual interaction of various parties to reduce risk of project failure.
- Manage, motivate, inform, and encourage the project team.
- Agree precise specification for the project.
- Plan the project including time, team, activities, resources, financials.
- Communicate the project plan to the project team.
- Agree and delegate project actions.
- Check, measure, review project progress, adjust project plans, and inform the project team and others.
- Review and report on project performance.
- Give praise and thanks to the project team.

What is Project Management?

Project management is a discipline of defining and achieving targets, which is now commonly used in the world of work as a means of delivering projects. It is about optimising the use of resources, time, money, people, materials, energy, space, etc. over the course of a project. It is also concerned with delivering a project within a given timeframe and according to agreed specifications and deliverables.

Project Management Process

A project management process can have many stages depending on the size and complexity of the project. Presented below is a simplified version of the process, aimed at introducing a basic process to educators and learners.

Project definition (Scope and justification)

This is where the project manager and the team state their brief on the project. In the case where there is a client for the project, the definition stage is where every detail about the project is stated. This includes what the project intends to achieve and any background that justifies the project.

It is at this stage that the scope of the project is defined to show how far a project intends to go.

This is determined by the specifications, which may include quantities and budget. It is critical that for the project to be clearly defined so that any agreement between a project manager and the client is based on clear deliverables.

Project Planning

Once the project has been defined, the next stage is to develop a project plan. The project plan has to include a break down of activities that make up the project. It also has to have the estimated amount of time allocated to each activity. In this way, the project team will have something to monitor the progress of the project. Once a project plan is complete, it has to be signed off by the client, together with the project manager. In the case of the SAYWP, the Client could be the teacher as the overseer.

Project Execution or project production

This is the stage where the project starts under strict monitoring by the project manager. A project can only be successfully implemented by a project team and its manager. It is critical that these are selected based on their ability to deliver the project. Each member of the team must have a clear role, which should be included in the project plan. The role of the project manager is critical in ensuring that every member delivers according to the project plan. The project manager has to be in full control of the project and must be in a position to do some trouble shooting where the project experiences problems.

This could include removing, swapping or substituting those members of the team who are failing to deliver according to the project plan.

Project Monitoring and Reporting

This is the stage where the project manager reports progress on the project. This is done through scheduled progress meetings that must be included in the project plan. These are meeting that may be attended by the client for briefing on progress on the project. This includes any problems or challenges that the project may be experiencing. It is important for the learners engaged in projects to have such meetings to ensure that they do not only realise the problems of their projects when it is too late. Progress meeting are also important for helping the learners to understand the project more. Such meetings can be a very useful forum for preparing the team for presentations of the project to the adjudication panel.

Project Implementation

This is when the project is complete and it has to be officially handed over to the client. It includes commission the project, which means testing to ensure that everything works accordingly. After the commissioning stage a project is normally launched, which is when it is show cased to potential customers. A project close- down report is usually prepared by the project manager before presented to the client.

BASICS ON THE RESEARCH PROCESS

Every solution of product has to be supported by some form of research in order to be convincing to the target market or audience. Research means a search for the truth about a phenomena or situation. It provides facts about a situation, problems or phenomena. Research is crucial in understanding a situation/ context so that decisions are based on facts. The two types of research are qualitative or quantitative. In very simple terms, qualitative research is concerned with interpreting and understanding a situation, rather than seeking to prove or disprove a phenomenon. It is mainly based on observation of phenomena or situation. Quantitative research is about seeking to prove or disprove something. It is mainly based on establishing quantities. Therefore, the type of research to use depends on what needs to be established. This also determines the types of instruments to use including interviews, questionnaires, etc.

Research generates information, which forms the basis for scientific and technological developments that take place worldwide. It is through research that justification to guide a decision or action is made. Without research, it would be difficult to convince other people about a situation. It would also be impossible to know whether the solution is new or already exists. It also would reveal whether the solution has failed before. With such information, the project team would be in a position to work out how to go about the project. Therefore, learners need to do some research in order to justify their projects and to convince the adjudication panel that their solution is the right one.

Develop a research question or hypothesis

Research can be driven by the gut feeling and a quest to find the truth about something in order to justify the cause of action being taken. Such a feeling may lead to a question like “Why is our town always running short of water when it also receives a lot of rainfall every year?” Such a research question or hypothesis would lead to the need to establish what causes the situation. Once this is established, a solution would need to be found, which is where ‘Awareness Creation’ or ‘Invention/ Innovation’ would be needed.

Review available literature

Reviewing available literature is the starting in finding out what has or has not been done in the subject being researched. It can also provide more ideas that can be useful in refining the research question or hypothesis. The internet (if available) is a good starting point for literature review because it can give access to a wealth of information on what is happening around the world. Libraries also provide a good opportunity to read about the subject being researched.

Designing methodology for undertaking research

The methodology for undertaking research will depend on a situation. However, the most important things to consider in designing your methodology are the time and budget available to undertake the research. These guide the instruments needed and how they will be administered. For example, research that involves travelling can be more costly than sending questionnaires to the target group. Cost and budget also determine the size of the sample being researched. Desk studies are a good approach to literature review, especially when the budget and time are limited.

So, learners need to consider using desk studies for their projects because of limited time and funding.

Collecting and analysing data

Data collection is an important part of a research process and about administering the research instrument. Once data has been collected, it has to be analysed, which leads to the findings of the research. Through the analysis, statistics are generated and these can be used to either prove or disprove a phenomenon. Learners need to learn basics about analysing data.

Reporting and disseminating findings

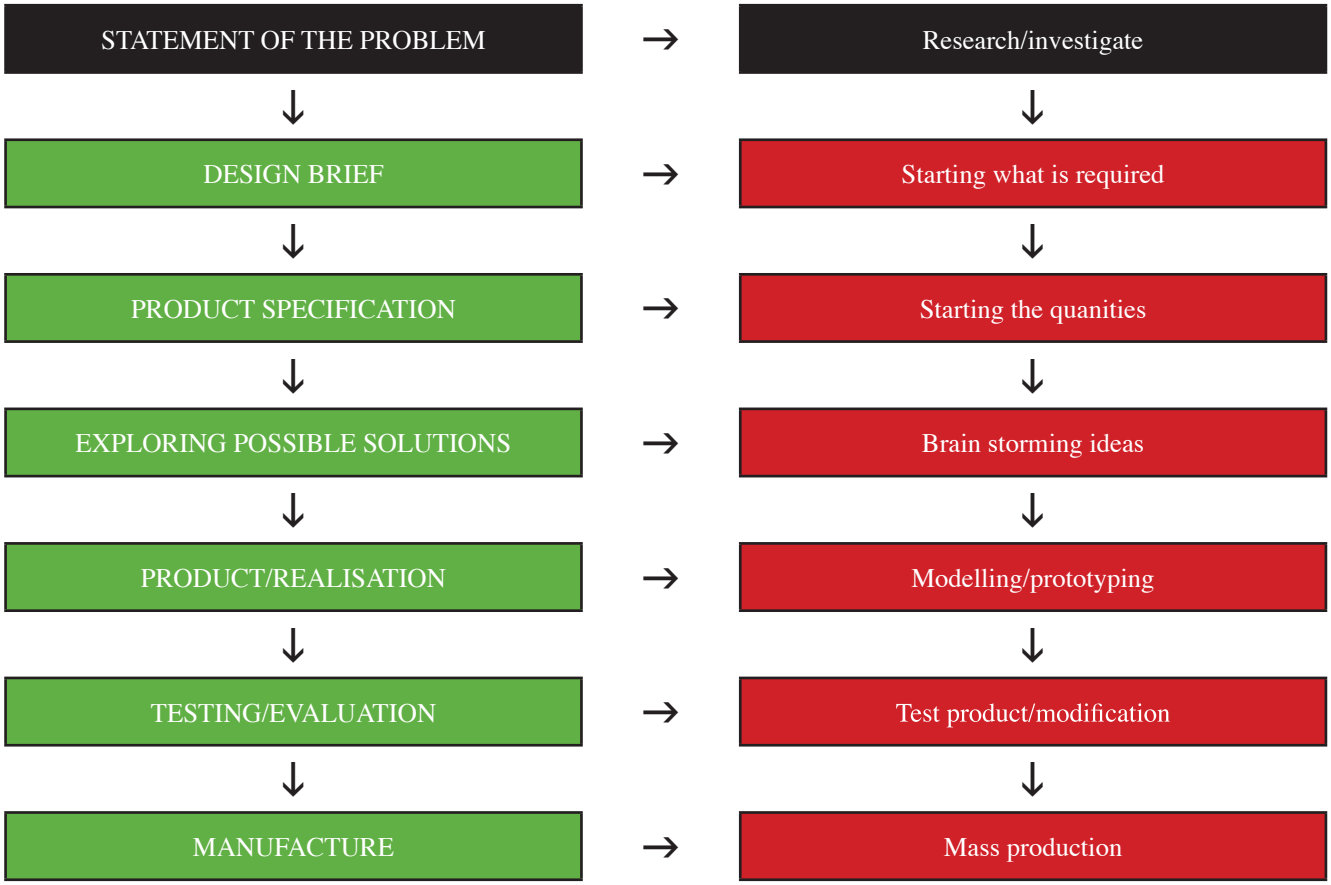
Reporting research findings is the most important and difficult part of the process. The difficulty can be in ensuring that the target audience does not doubt the findings. The report needs to be very objective in order to convince the audience that it is targeting. This also means that the methodology has to be very convincing and learners need to be aware that some people will always doubt their findings. Therefore, they must be objective and clear in their reporting. They also need to know that the research findings will be the basis for justifying their projects.

BASICS ON THE DESIGN PROCESS

THE DESIGN PROCESS

Designing is creative process used in problem solving and innovation activities. The process is largely used in the manufacturing industry for either improving products or coming up with brand new ones. Through design, the needs of a customer or the marketplace are transformed into commercial products. Every product we use or see around us is a result of the design process. Equally, every product is a solution to an identified need or problem. A design process is a systematic problem solving strategy, with criteria and constraints. It is used to develop many possible solutions to solve a problem or satisfy human needs and wants. The possible solutions are then winnowed or narrowed down to one best solution. It is very important that learners in invention and innovation projects understand the basics of the design process and to apply in their work. The SAYWP competition provide an opportunity for application of the process. While the design process can have many stages, the basic process is described below.

A TYPICAL DESIGN PROCESS



RESOURCES FOR THE DESIGN PROCESS

THE PROBLEM

Wherever there are people, there are always problems needing solutions. The process of designing begins when there is a need, situation or problem. In some cases, the designer may have to invent a product. An example might be a game for blind people. At other times, the designer may change an existing design. (If the handle of a pot becomes too hot to touch, it must be redesigned.). Designers also improve existing products. They make the product work even better. Could the chair in the waiting room of a bus or train station be altered so that waiting seems shorter?

DESIGN BRIEF

The design brief is typically a statement of intent, which describes simply and clearly what is to be designed. It should be very clear and brief and is used to encourage thinking of all aspects of a problem before attempting a solution. Although the design brief states the problem, it does not provide enough information with which to start designing.

Some examples of problems and design briefs are listed below:

- **PROBLEM:** People in your community are falling sick because of an outbreak of diarrhoea caused by contaminated water from the river that supplies their water.
- **DESIGN BRIEF:** Design a water-purifying system for you community.
- PROBLEM: Your community does not have running water but there are regular rains in the area.
- **DESIGN BRIEF:** Design a system for harvesting water for your community.
- **PROBLEM:** Water in your area is very salty and is not drinkable.
- **DESIGN BRIEF:** Design a product that will solve the problem of saline water in your area.

PRODUCT DESIGN SPECIFICATIONS

Description of what the product should be able to do is called the product design specifications. It is the most important part of the design process and determines all the next stages of the process. When a product is completed, it gets tested against the product design specifications. If it fails, it cannot be introduced into market. Specification and design considerations should consider the following:

- **MARKET:** Every product must have a target market, the size of which has to be stated.
- **EXPECTED RESULTS:** Durability, environmental friendliness of the product, cost of production and expected income from sale of the product.
- **BUDGET:** Each stage of the design process has to be costed in terms of time and resources used.
- **FUNCTION:** The product must solve the problem described in the design brief. The basic question to ask is: “What exactly is the use of the product?”
- **APPEARANCE:** The shape, colour, texture, size, etc.
- **MATERIALS:** What materials are available? How affordable are they? Are they affordable? Do they have the right physical properties, such as strength, rigidity, colour, and durability?
- **CONSTRUCTION:** How hard or simple would it be to make the product? There is a need to consider what methods you will need to cut, shape, form, join, and finish the material.
- **SAFETY:** The product being designed must be safe for users.

EXPLORATION OF POSSIBLE SOLUTIONS

Development of possible solutions requires generation of sketches or concept drawings. Concept design is an out line of the product, which can be shared with a client to give an idea of what the product looks like. In design, generation of possible solutions is achieved through a brainstorming of many ideas after which the best idea is chosen (See details of Brainstorming techniques on page 50 of these guidelines). It is very important to write or draw every idea on paper as it occurs or comes to mind. Describe the ideas more clearly though sketches. These do not have to be very detailed or accurate. It is also easier to discuss ideas with other people if you have a drawing. These first sketches do not have to be very detailed or accurate. They should be made quickly. The important thing is to record all ideas, even some wild ones - as they come and without being critical. Having many concept ideas is more likely to produce a good solution.

CHOOSING THE BEST SOLUTION

When several possible solutions have been found, it becomes critical to select the best of them all. Choosing the best solution amongst several possible solutions is not always an easy task. It requires an elimination process which entails testing the concept of each solution against the design brief and the product design specification. This could include summarising the design requirements and solutions and putting the summary in a chart format.

The following aspects should assist in the elimination process:

- Your own skills
- The materials available
- Time needed to make each of the solutions.
- Cost of each solution.

Choosing or selecting the best solution needs to involve the client and the product. Once the concept has been accepted or approved by the client, it becomes easier and less worrying for the designer to engage in the next stages of the process.

DEVELOPING THE BEST SOLUTION

Following acceptance or approval of the concept or chosen solution by the customer, a detailed design of the product has to be made. This is meant to improve the understanding of how to make the final product. It includes production of detailed drawings or working drawings of the chosen solution. These are used to guide the manufacturers of the product. A working drawing must show all the necessary information needed to make the product, including the following:

- The overall dimensions
- Detailed dimensions
- The material to be used
- How it will be made
- What finish will be required

DESIGN REALISATION OR CONSTRUCTION OF THE PRODUCT

Design realisation is the stage of turning drawings into real products. It relies on the working drawings described above. The process of making a product can be in two ways namely: modelling and prototyping. A model is a full- size or small-scale simulation of product. Architects, engineers, and most designers use models. Using a model is a very effective way of communicating an idea. It is far easier to understand an idea when seen in three-dimensional form. This could be a model of a house or a machine. A scaled- down model is normally used when designing objects that are very large. Scaled-down models tend to reduce costs while achieving the intended purpose especially where size does not matter. Modelling can also be used for research or testing purposes. This is where engineers or designers want to ascertain whether a product will work before making the real product. It can be much cheaper to test with a model than with a real product.

A prototype is the first working version of a product before it is mass-produced for the market. It is usually a full-size working model or product and is often handmade. It is used to test a design concept by making actual observations and necessary adjustments. Once tests are complete, the product is mass-produced for the market. The reality is that products continue to be tested by the market. They get redesigned to improve them based on feedback from the market.

TESTING AND EVALUATION OF PRODUCT OR SOLUTION

Testing and evaluating are usually taken as meaning the same thing. They happen to be part of the same process. Testing is the act of trying something out, whereas evaluation is mainly about standing back and saying ‘how has it performed? The two stages are undertaken before a product is introduced to the market. They are meant to establish whether the model or prototypes can answer three basic questions:

1 Does the product/solution work?

2 Does it meet the design brief?

3 Does it meet all the specifications?

It is critical for a solution or product to answer the above questions. If it does not, then more work will have to be done to improve on it.

BRAINSTORMING AS AN EFFECTIVE PROBLEM-SOLVING TOOL

Problem-solving activities require generation of many ideas from which the best solution is chosen. Brainstorming exercise, which is a generic term for creative thinking, can be very handy for generating ideas. It is based on the premise that deliberate creative thinking can only be done in groups. As such, other people's remarks can stimulate one's own ideas in a sort of chain reaction of ideas. The basis of brainstorming is generating ideas on the principle of suspending judgment. Scientific research has shown that brainstorming can be highly productive in individual effort as well as group effort. Brainstorming can be useful in enabling a group to take an idea in more directions than the originator.

Brainstorming works best with a group of people and with the following four rules:

1 Have a well-defined and clearly stated problem.

2 Have someone assigned to write down all the ideas as they occur.

3 Have the right number of people in the group.

4 Have someone in charge to help enforce the following guidelines:
   - ◊ Suspend judgement
   - ◊ Accept and record every idea
   - ◊ Encourage people to build on the ideas of others
   - ◊ Encourage way-out and odd ideas

Learners need to be encouraged to use brainstorming sessions especially during the idea generation stage of their projects. It can save a lot of time and would help to generate a variety of ideas. Most importantly, brainstorming sessions would prepare learners to work as teams.

BASICS ON INTELLECTUAL PROPERTY

The purpose of this section is to briefly explain the importance of intellectual property rights and how they could apply to work of the learners undertaking SAYWP projects. Intellectual property is creations of the human mind, which include inventions, innovations, scientific works, scientific discoveries, literary and artistic works, and symbols, names, images, and designs used in everyday life. Intellectual property rights protect the interests of creators by giving them property or ownership rights over their creations for a certain period. Examples of intellectual property include product names, designs, logos, titles, text, images, audio or video productions, trademarks, service marks and trade names.

Intellectual Property is a body of knowledge that cannot be detailed in these guidelines. However, it is critical for both educators and learners to understand the importance of intellectual property in relation to their projects. They need to know that any new creation needs to be legally protected so that others do not steal the idea and reproduce it for their own gain. Learners who create novel products with a potential market need to get their works protected through the Patent Office in their area. Equally, they need to know that they are not allowed to use other people information and or knowledge without authorisation from the owners. They are required to acknowledge sources of any information or knowledge that is not theirs. This includes information or knowledge they acquire from books, DVDs, videos material, interviews and any other source of information. Such information or knowledge is Intellectual Property of those who created it.

Categories of Intellectual Property

Intellectual Property is generally protected under patent, trademark, service mark, copyright, trade secret, etc.It is divided into two categories namely Industrial property and Copyright. Industrial Property includes inventions, innovations, trademarks, industrial designs and geographic indications. Industrial property is protected through a patent, which is a document that grants an inventor sole rights to an invention or innovation. A patent normally lasts for 20 years, and the creator has to renew it every year. After 20 years, a patent becomes public domain, which means that other people may copy or reproduce it. A Copyright protects literary and artistic works such as novels, poems and plays, films, musical works, artistic works such as drawings, paintings, photographs and sculptures, research and architectural designs.

Rights related to copyright include those of performing artists and those of broadcasters in radio and television programmes. Copyright last up to 50 years before it can become public domain. Anyone seeking to copy, perform or reproduce original works before expiry date requires authorisation of the creator. A trademark can be a combination of words and symbols, symbols alone, name, device or stylised text that identifies a product with a creator.

Examples of trademarks include Coca-Cola (soft drink beverage) and Microsoft (computer software). A service mark is similar to a trademark except that a service mark is used to identify a service rendered or offered and to distinguish it from other services. Common service marks in South Africa include ABSA. NEDBANK and KFC.

INVENTION AND INNOVATION

It is important to differentiate between an invention and an innovation. People tend to use the terms interchangeably. An invention is a totally original and useful process, device or product which is the first and the only of its kind. The first telephone, fax machine, audio cassette player, aeroplane, television, train or gun was an invention. In fact, there are very few inventors worldwide - but there are many innovators. In simple terms, an innovation is a continuous improvement of an existing product or invention. Most products we use or see today - such as cars, telephones, utensils, computers, etc - are innovations. Innovation is important for products to be competitive on the market. An invention is usually a new solution to technical problem, which may be old or new. It must be of practical use or capable of some kind of industrial application. It must also have a new characteristic not known in the body of existing knowledge also known as prior art in its technical field. It must show an inventive step that could not be deduced by a person with average knowledge of the technical field.

AWARENESS CREATION CATEGORY

Awareness creation category is different from that of an innovation or invention. It is about creating a medium for communicating a message to a target group. Awareness creation is used where there is need to change people's behaviour or to alert them to a problem. It can also be used to provide information about something that the targeted group or market needs to know in order to improve its quality of life. Advertising is an example of a good awareness gy. Awareness creation can also be about bringing a community's attention to a serious problem such as an outbreak of a disease like cholera due to contaminated water. Awareness creation can also be used to offer a solution to a problem, sending a message about how boiling water before drinking can save children from dying of cholera. HIV and AIDS awareness is one of the biggest campaigns of our time, which is aimed at changing behaviour and attitude in order to avoid catching the disease or spreading it through unprotected sex. The effectiveness of an awareness creation strategy is determined by the medium of communication and its creative application. Examples of media normally used for awareness creation include posters, newspapers, radio, television and music. The challenge for the learners who do awareness creation projects is to find an appropriate medium to communicate messages. At times it calls for a multi-media approach in order to create impact of the strategy.

BASICS ON INTELLECTUAL PROPERTY

Educators have a major role to play in preparing learners for the competition as they do in preparing them for examinations. However, in a problem-solving environment their role should be mainly to do the following:

- Motivate learners throughout their projects. It can be difficult for learners to maintain the
- momentum and enthusiasm especially when the project is not yielding the expected results.
- Show support the learners in the development of their projects.
- Facilitate acquisition of required resources including any reference information, which the learners would need for their projects. This is critical for ensuring that a project is completed according plan. It is also important in keeping the project team motivated.
- Point the learners in the right direction as they search for necessary information. This could include reference to a library, suppliers, experts and reference materials.
- Ensure that plans are followed in delivering the projects by monitoring progress on a regular basis.
- Act as a sounding board for the learners and this could be at the brainstorming stage of the project.

(Refer to page on for details on Brainstorming techniques)

APPENDIX

AUDIT FORM FOR AWARENESS CREATION

SCORE SHEET - (AWARENESS CREATION)

AUDIT FORM FOR INVENTION/INNOVATION

SCORE SHEET FOR INVENTION/INNOVATION

INDEMNITY FORM FROM PARENT/GUARDIAN

AUDIT FORM FOR AWARENESS CREATION
(Strictly for Auditors only)

AUDITOR: _____

NAME OF SCHOOL: _____

NAME OF PRODUCT: _____

NO	CRITERIA	MAX POINTS	POINTS ALLOCATED
1	PROBLEM DEFINITION	10	
2	CREATIVITY	20	
3	PRACTICALITY	20	
4	METHODOLOGY	20	
5	SUBJECT KNOWLEDGE	20	
6	PRESENTATION	10	
7	TOTAL	100	

COMMENTS: _____

_____

_____

RECOMMENDATIONS: _____

_____

_____

SIGNED: _____ DATE: _____

SCORE SHEET – (AWARENESS CREATION)

ADJUDICATOR: _____

NAME OF SCHOOL: _____

NAME OF PRODUCT: _____

CRITERIA	TOTAL – MARKS	ALLOCATED
PROBLEM DEFINITION		
Clear statement of the problem	3	
Evidence of background research	7	
Sub-total		
Originality of solution/product		
Innovativeness, novelty (originality) of solution	10	
Appropriateness of solution to target users/market	10	
Sub-total	**20**	
PRACTICALITY OF SOLUTION/PRODUCT		
Solution actually works	10	
Solution does solve the problem	10	
Sub-total	**20**	
METHODOLOGY USED TO GENERATE SOLUTION		
Suitability of technique	10	
Consideration of other methods	5	
Consideration of target user/market	5	
Sub-total	**20**	
SUBJECT KNOWLEDGE		
Application of science and technology knowledge	10	
Appropriateness of knowledge to level of learner(s)	10	
Sub-total	**20**	
PRESENTATION		
Appropriateness of medium for presentation	3	
Clarity of presentation	3	
Time management	4	
Sub-total	**10**	
GRAND TOTAL	**100**	

COMMENTS: _____

_____

RECOMMENDATIONS: _____

_____

SIGNED: _____ DATE: _____

AUDIT FORM FOR INVENTION/INNOVATION
(Strictly for Auditors only)

AUDITOR: _____

NAME OF SCHOOL: _____

NAME OF PRODUCT: _____

NO	CRITERIA	MAX POINTS	POINTS ALLOCATED
1	PROBLEM DEFINITION	10	
2	ORIGINALITY	20	
3	FUNCTIONALITY	25	
4	REALISTATION/PRODUCTION	20	
5	SUBJECT KNOWLEDGE	15	
6	PRESENTATION	10	
7	TOTAL	100	

COMMENTS: _____

_____

_____

RECOMMENDATIONS: _____

_____

_____

SIGNED: _____ DATE: _____

SCORE SHEET FOR INVENTION/INNOVATION

ADJUDICATOR: _____

NAME OF SCHOOL: _____

NAME OF PRODUCT: _____

CRITERIA	TOTAL – MARKS	ALLOCATED
Problem definition		
Clear statement of the problem	3	
Evidence of background research	7	
Sub-total	10	
Originality		
Innovativeness, novelty (originality) of solution	10	
Appropriateness of solution to target users/market	10	
Sub-total	20	
Functionality		
Solution actually works	10	
Solution does solve the problem it is designed for	10	
Solution fits in with specification	5	
Sub-total	25	
Realisation/Production		
Appropriateness of material used, e.g. strength, durability	5	
Use of readily available materials	5	
Appearance, i.e. shape, form and finish on product	5	
Safety of the product	5	
Sub-total	20	
Subject knowledge		
Application of science and technology knowledge	5	
Appropriateness of applied knowledge to level learner(s)	5	
Suitability of knowledge to solution	5	
Sub-total	15	
Presentation		
Appropriateness of medium for presentation	3	
Clarity of presentation	3	
Time management	4	
Sub-total	10	
GRAND TOTAL	100	

COMMENTS: _____

_____

RECOMMENDATIONS: _____

_____

SIGNED: _____ DATE: _____

PART A

INDEMNITY FORM FROM PARENT/GUARDIAN

I _____

Parent/Legal Guardian (Please encircle as appropriate)

A learner at _____

Herby authorise the person or persons in charge and mandate or authorised by the Department of Water and Sanitation (DWS) to be die guardian of

Name of child _____

During travel to and from district, provincial, National competition and the Award ceremony. This authorisation is based on the understanding that the person on persons mandated/authorised by DWS will take all necessary precautions to ensure the safety and wellbeing of my child. I agree to exempt DWS and its employees, agents and all representatives from any injury, illness or loss suffered by the guardian or my child.

I undertake to ensure that my child has been spending money, enough warm clothing and any other necessary items such as medicine, toiletries, etc.

I hereby declare that I have read and understand the contents of this form and that the information provided is accurate.

_____	_____	_____
Name of Parent/Guardian	Date	Signature

_____	_____	_____
Name of DWS Official	Date	Signature

INDEMNITY FORM FROM PARENT/GUARDIAN

PART B

PARTICULARS OF THE CHILD

Name:	Surname:
Preferred name:	Date of birth:
Sex:	Age:
School:	Home language:
Home address:	Home tell:
District:	Province:

MEDICAL HISTORY OF THE CHILD

Known chronic conditions, e.g. asthma, allergies to certain foods	
Specific medical problem to be known by the person or persons accompanying the child	

PARTICULARS OF A PARENT OR LEGAL GUARDIAN

Name:	Surname:
Occupation	Name of employer:
Physical work address:	Work tell:
Cell phone:	Home tell:
Relation (e.g. mother):	ID no:

NEXT OF KIN, OTHER THAN PARENT OR LEGAL GUARDIAN

Name:	Surname:
Occupation	Name of employer:
Physical work address:	Work tell:
Cell phone:	Home tell:
Relation (e.g. uncle):	ID no:

MEDICAL AID HOLDER

Name of Medical Aid holder:	
Name of Medical Aid:	
Member number:	
Family Doctor:	
Physical work address:	Tell:
Cell phone:	Home tell:
Signature of Parent/Legal Guardian:	
Date of signing by Parent/Legal Guardian:	
Signature of DWS Official:	
Date of signing by DWS Official:	

WORKSHOP EVALUATION FORM

Name of participant? _____

Workshop attended? _____

_____

List three useful things you have learnt for the workshop? _____

_____

_____

How do you intend to apply what you have learnt from this workshop? _____

_____

_____

Did the workshop cover most of your needs?

Yes _____

No _____

If not, what did it not cover? _____

_____

_____

What improvements would you like to see in the future? _____

_____

_____

How do you rat the workshop? Use the scale below with 5 being the highest and 1 the lowest. (Please tick)

1	Facilitator well-prepared?	1	2	3	4	5
2	Clear objectives in what (s)he was trying to achieve?	1	2	3	4	5
3	Instructions clear and to-the-point?	1	2	3	4	5
4	Materials and teaching aid for the workshop	1	2	3	4	5
5	Accommodation	1	2	3	4	5
6	Meals	1	2	3	4	5
7	Organisation of workshops	1	2	3	4	5

Any comments to support your ratings: _____

_____

_____

_____

_____

_____

_____

_____

_____

_____

EXTERNAL BURSARY SCHEME

The Department of Water and Sanitation (DWS) is the custodian of South Africa's water resources.

It is primarily responsible for the formulation and implementation of policy governing the sector. The DWS also has overriding responsibility for water services provided by local government.While striving to ensure that all South Africans gain access to clean water and safe sanitation, the water branch also promotes effective and efficient water resources management to ensure sustainable economic and social development.

VISION

DWS has a vision of being: A dynamic, people centered department, leading the effective management of the nation's water resources, to meet the needs of current and future.

MISSION

As sector leader, DWS's mission is to serve the people of South Africa by:

The Department of Water and Sanitation makes a positive impact on our country and its people as custodians of our water resources, and as innovative and committed partners in the drive for sustainable development.

- We are service and delivery oriented. We strive to get it right the first time, every time, on time –
- ensuring that our citizens are provided with the water and sanitation services they deserve.
- We lead our sector and enable our partners with knowledge and capacity to ensure that all water services are delivered.
- We are committed to innovation and use cutting edge technology as a catalyst of positive change,connecting our people and enabling them to work anywhere anytime.
- We are a Department with heart that values our investment in our people. We provide them with a caring and trusting environment that encourages personal development, and is a breeding ground for talent.

VALUES

DWS's has embraced the following core values:

- Transparency - we fulfill our mandate in an ethical and open manner.
- Respect - we respect each other as well as our clients and the needs of our citizens.
- Excellence - we are leaders and innovators in our sector who get it right on time every time.
- Everyone - we are a caring employer who through teamwork serves South Africa's people.

CORE VALUES FOR TRANSFORMATION

DWS recognises that people are the cornerstone of the Department's success and diversity is valued as a source of strength. DWS strives for a Department that fosters personal growth and achievement.

BURSARY SCHEME PARTICIPATING UNIVERSITIES

Currently bursaries for the full time pre and postgraduate studies are granted on an annual basis to learners at the following South African universities:

- University of Pretoria
- University of Kwa-Zulu Natal
- University of the Free State
- University of Cape Town
- University of Stellenbosch
- University of the Western Cape
- University of Limpopo
- Nelson Mandela Metropolitan University
- Walter Sisulu University
- Tshwane University of Technology
- Durban University of Technology
- Central University of Technology
- Cape Peninsula University of Technology
- Vaal University of Technology
- University of Venda
- University of Witwatersrand
- University of Johannesburg
- University of Zululand
- Students pursuing the following fields of study are eligible to apply for this bursary:
- Analytical Chemistry
- Aquatic Sciences
- Biochemistry
- Biological Sciences

- Cartography
- Engineering
- Civil Engineering
- Electrical Engineering (Heavy Current)
- Mechanical Engineering
- Environmental Law
- Environmental Management
- Environmental Science
- Geo-chemistry
- Geographical information Systems
- Geo-hydrology
- Geology
- Hydrology
- Limnology
- Microbiology
- Surveying
- Water and Sanitation
- Water Care
- Water Resource Management
- Water Utilisation
- Bursaries will be allocated on the basis of a balanced consideration of the following factors
- Academic performance
- Race and gender
- Financial need
- Need of DWS in reference of the specific qualification

An interview schedule

Assistance will be provided on a year-to-year basis and bursaries will be renewed only if performance of bursars is satisfactory.

- Successful applicants to the bursary scheme receive the following support
- Full tertiary registration and tuition costs
- Residence and meal fees
- Book allowance
- An annual personal allowance

Obligations

DWS will require bursars who obtain their qualifications to join the Department's Learning Academy on a fixed term contract for a period of maximum five (5) years but not less than three (3) years. Should bursars choose not to meet this obligation, the bursars will be required to reimburse DWS for all monies spent on the tertiary studies, inclusive of calculated interest.

Applications

Application forms can be obtained from www.dwa.gov.za/learning /bursaryC.aspx and relevant academic faculties or departments of the relevant universities annually.

For More Information

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(012) 336 7448 meyerv@dwa.gov.za

Mr Bertie Bekker
Strategic Support Manager
(012) 336 7760 bekkerb2@dwa.gov.za

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Regional Coordinator
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Free State

Regional Coordinator
Tell: 012 393 1300
Fax: 086 655 4564

KwaZulu-Natal

Regional Coordinator
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Mpumalanga

Regional Coordinator
Tell: 013 759 7300/7451
Fax: 086 720 4063

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