

THE HEURISTIC METHOD IN THE STUDY OF HISTORY AT THE PRIMARY SCHOOL

Mrs M G Raper and Mrs B Dry
Johannesburg College of Education

The heuristic method, from the Greek *heuriskein* meaning to find, is also known as the discovery method. It is by no means something new in the educational field, having been recommended by such great people as Socrates, Quintilian and Comenius (Meyer 1965: 243). More recently educationists like Maria Montessori advocated providing opportunities for pupil discovery and recommended that the teacher "... become the director of the spontaneous work of the children" (Montessori 1965: 317).

Jerome Bruner is one of the most well-known protagonists of the discovery method and his work *The Act of Discovery* won him much acclaim (Crow & Crow, 1964: 424). Other modern educationists have referred to this method as the "inquiry method" or the "problem-solving method". Today the focus in the use of this method is on the use of technology in the development of problem-solving skills and the role of educational psychology in achieving understanding about how information is processed for coming to conclusions and arriving at solutions.

So what are the characteristics of this method?

The heuristic method, like all other teaching methods, has particular distinguishing features. What is of particular note are the roles played by the teacher and the pupil. These roles differ markedly from those played in other teaching situations. There is also a change in organization and classroom atmosphere. The change referred to here is the traditional or expository type of teaching in which the teacher talks, explains, demonstrates or describes and the pupils listen, record and sometimes question. (Maarschalk 1974: 140; Bruner 1964: 425). The heuristic method can be seen in contrast to the expository though, in practice, there is seldom a lesson which is either wholly expository or heuristic (Maarschalk 1974: 67).

The role of the teacher in the expository mode of teaching is that of a dispenser of knowledge and the responsible adult. He/she carries out all the planning, evaluates the tasks and controls the pupils within the classroom environment. Within the heuristic method, the teacher takes the role of facilitator who makes it possible for the child to find out for himself. He/she acts as a catalyst for enquiry and also guides the enquiry. Instead of being the initiator at all times, he/she also allows the children to provide the stimulus for enquiry and organized the learning environment in a freer, more flexible social climate. Children are also encouraged to help evaluate the work done (Smith & Keith 1971: 34).

There is also a shift in emphasis on the role played by the pupil. In the traditional school situation, he sat passively absorbing and assimilating, listening and recording. He has been required to follow the teacher's guidance and leadership and was restricted in movement and behaviour, externally motivated and disciplined and accepted the teacher's planning and evaluation. In the heuristic method, the child often

initiates the study and may participate in the planning of learning activities with his teacher. He is self-motivated because of his initiative in the project and he constantly interacts with his peers to identify possible solutions. He is actively participant and may lead rather than follow. He will be called on to evaluate, with his peers, what has been done (Smith & Keith 1971: 34).

The classroom has to be reorganized with a view to the refocusing of objectives in the heuristic method. There is more flexibility in order to facilitate investigation and desks are no longer arranged in rows but are moved around to suit the instructional activities. Far more media are available in the classroom which also becomes a resource centre, and the classroom does not provide the only venue for investigation (Maarschalk 1974: 141).

It is of great importance for the teacher to select the learning content for the heuristic method very carefully, taking into account the child's interests as well as his linguistic level and the relevance of the material for him. Certain topics lend themselves to the enquiry method while others are better suited to an expository mode.

From the time of Dewey, psychologists and educationists have looked at problem-solving and identified particular steps in the process. Phase one has been variously described as "a felt difficulty" (Dewey), "an occurrence of perplexity" (Gray) or "the arousal of curiosity" (Maarschalk). This phase is important but unless it is followed up quickly, the interest will soon wane and curiosity will be focused elsewhere. Thus the teacher needs to direct the curiosity and this direction forms the next phase of the method. This the teacher does by drawing attention to particular areas or facets of the stimulus, in so doing enabling the child to channel his thoughts into specific questions. In the second phase the child has also identified his previous knowledge, gathered new data and posed questions. This should lead him to fixing the parameters of the problem facing him. He should now be aware of what it is that he is uncertain about or what the contradiction that faces him is. His learning is now directed at gaining certainty again (Bigge & Hunt 1965: 466).

In the fourth phase pupils are encouraged to ask questions which will help them to identify as many solutions as possible to the problem. The teacher, in directing the search, which is the essence of this phase, will ask pupils to vary their approaches and he will also direct their questioning. There is some controversy on this particular point - whereas Gagné is a firm adherent of guided discovery, Bruner speaks of independent child discovery (Clarizio et al. 1971: 210).

In phase five the child is expected to test his solutions. He should be able to verify his solutions by testing them against feasibility and logic. This requires reorganization of information by providing links

or connections so that it may be transformed into solutions (Ausubel 1969: 69). The final phase of the heuristic method is the eureka experience or the finding of the solution.

Now that the method has been explained, its characteristics described and the phases outlined, one can proceed to examine this method within the context of the History curriculum. It is possible to use the heuristic method in many ways within the History curriculum at both primary and high schools - to investigate life-styles, architecture, specific incidents or particular people. History is a subject which covers a wide spectrum of human endeavour - politics, religion, warfare, cultural activities and social achievements to mention but a few. These issues can, in turn, be studied at either national or international level. For the primary school child, however, a much narrower focus is needed as some of these areas are far too abstract and difficult for him to grasp. One of the areas which is particularly relevant is that of local History encompassing, as it does, the study of his own particular environment.

The use of the heuristic method in the study of local History would imply that the child would be involved in the investigation of the area which is most familiar to him - his own village, town or suburb. This is the area in which he and his family would do their shopping, live, worship and attend school. This is where he plays sport and is involved in youth groups or other recreational activities.

In Britain and other countries, the study of local History has become the field of the amateur enthusiast and in this country too, local History societies are on the increase. This means that local History can be the means of bridging the gap between the home and the school as, once enthusiasm for the project is engendered, parents, pupils and teachers can pool their efforts in researching the history of a specific area.

There are several other reasons why the study of local History can be beneficial to the primary school child. Firstly, the subject matter is familiar to the pupil and already a part of his experience. Good teaching, moreover, has always favoured starting with the known before proceeding to less familiar ground. Secondly, pupils will be encouraged to investigate their own environment more closely and focus their attention on less familiar aspects of it. This will probably stimulate them to do some investigation on their own.

Local History is also particularly relevant to the pupil at the concrete operational mode of thinking as he will be dealing with the "... tangible relics of the past" (Gosden & Sylvester 1968: 38). The teacher is able to take pupils on excursions to actual sites and get them to examine buildings constructed in the past. This should broaden their horizons and make them aware of the history all around them within their own environment. Houses, churches, schools, monuments, municipal buildings, libraries, shop and theatres can all play a part in this investigation. Dix (1981: 3) also points out that the cemetery should form a part of the study.

The excursion will also create a greater feeling of reality for the child than the expository type of lesson ever could. The pupil will be investigating "real" people in "real" situations and this will have great

significance for him and give him a sense of belonging.

A local History project can also form the basis of cross-curriculum or integrated studies in the school. For example, the fauna and flora of the area in question could be studied; the use of the land, the weather and climate could be investigated and the water and other resources explored. All of this could be used as the basis for writing and reading activities in the languages. Interviewing the people who live in the area could also become part of the project thus forming new bonds of understanding. (Douch 1967: 6)

The advantages that this type of study has for creating historical insight are also enormous. Children, introduced to the pleasures of fieldwork, will find that they have to use the clues of the past to come to conclusions - "... a most effective way of showing pupils what History is and how it is made, and of giving them some acquaintance with the sources and research methods of History" (Gosden & Sylvester 1968: 35).

Local History also often has a strong link with national history and thus a natural consequence of an investigation of events at a local level would be to show their significance at national level.

This type of study would also provide ample opportunity for the teacher to foster the development of critical thinking skills within each pupil. These are observation, interpretation and analysis of evidence. They may also develop lasting leisure interests and may learn to take responsibility for their own environment which would include the preservation of historical sites or buildings.

Having explored the reasons for undertaking the study of local History through the heuristic method, the choice of a case study in local History fell on Sandton. This choice was made for several reasons. Firstly, a thorough study was made of this area by Mrs Brenda Dry who was a final year B.Prim. Ed. student at J.C.E. last year. Her work not only comprised research into the history of the area but also a unit of lesson plans for a Std 2 class. Her work was greatly appreciated by the Sandton Historical Association who had helped in her investigation by allowing her access to their annual magazines. Her work was shown to the Mayor of Sandton, Mr Peter Gardiner and, as his theme for the year 1988 was "Youth - the future", he invited teachers of the Sandton area to a meeting in his parlour where the work was presented. The meeting engendered much enthusiasm and Brenda's work was generously given by her to be copied for each Sandton library where all teachers may have access to it.

Apart from that, Sandton, though new as a municipality, has a long and interesting history. Here is a short resume of some aspects of its past.

The outcrop to the north of Bryanston was originally known as Leeukop and later as Lone Hill. Professor R.J. Mason, Director of the Archaeological Research Unit and Professor of Prehistory who carried out a preliminary investigation of the site reported that he was able to determine that Stone Age hunter-gatherers had used the site on three occasions. The earliest artefacts found there date to 50 - 75 000 years B.C. The second group of people he identifies as distant relatives of the Bushmen and he felt that

they had visited the site as explorers as their technology showed no links with that of the previous inhabitants. The third group was more closely connected to the Bushmen as we know them today and were probably directly descended from the ancestral Bushmen of the southern and central Orange Free State. (Notten & Pool 1980: 4)

Perhaps three or four hundred years ago the first Iron Age people moved into the vicinity of Lone Hill and occupied the plateau and other horizontal surfaces of the hill. The Iron Age people were probably ancestral Bantu-speaking people and from the decorative art they applied to their pottery, they can relate them to the descendants of the iron smelters of the Melville Koppies of the time of William the Conqueror (A.D. 1060). The presence of Iron Age man on Lone Hill is indicated by stone walls built around a plateau on the upper slopes of the south side of Lone Hill, by scattered pottery found on the lower pediment of Lone Hill and by iron slag and the remains of iron production (Notten & Pool 1980: 6).

Lone Hill was bought by Simon Notten in 1934 when it was known as Bobbejaanskranz. The original house was built of mud and timber on the property. It has been extended over the years and granite quarried from the koppie was used. (Notten & Pool, 1980: 16). As a nature conservationist, S.J. Notten stopped further quarrying and restricted access to the Koppie by fencing it off. This allowed the dassie population to survive until quite recently.

By the late 1950's, however, much of the land had been sold and the remaining 600 acres was bought by S.A. Films in 1962 (Notten, 1980: 16). The old farmhouse with its adjoining three acres adjoins the koppie and is presently owned by Anne (Notten) Pool. There are plans to make the koppie and its immediate surrounds a nature reserve with restricted access to the public. It will be known as the S.J. Notten Nature Reserve.

Sandton also has links with the Voortrekkers. The Esterhuysen Monument commemorates the Esterhuysen family, on whose farm, Zandfontein, most of the municipal area of Sandton lies. The Esterhuysen monument was erected in 1938 by members of the Esterhuysen family and was handed over to the Sandton municipality in 1982. Thus Sandton acquired its own historic monument as a tribute to its Voortrekker pioneers (Louw, 1984: 5).

Nothing is known of the first owner of Zandfontein, P. Nel, nor when he first occupied this large farm of about 3 000 morgen. He did not own it for long as it was acquired by Jan Christoffel Esterhuysen in August 1859. In time, he sold off parts of his farm to various members of his family.

There are other homes of historical interest in Sandton. The Wilhelmi farm was owned by Adolph and Elsa Wilhelmi, German immigrants who came to the country in 1891. The farm, Driefontein, of which they owned a part, boasted, at first, an iron shack but later Adolph built a stone house and dug a well on the empty land in a curve of the Jukskei River, opposite where the Sandton Field and Study Centre is today. The Wilhelmi's planted many of the gums and wattles that are still there today for tanning extract. The foundations of the first house remain and in 1982 were excavated by Professor Revil Mason.

Mr Wilhelmi dammed up the river and surrounded it

with willows and the place became a popular picnic spot for the German community of Johannesburg. Mrs Louw, in her account of the Wilhelms, tells of the visit of Elsa's mother from Germany. Apparently she brought some seeds with her which she called "Japanisches Gras" which Elsa planted and distributed far and wide - in this way, she said, she had introduced cosmos to the Rand! (Louw 1976: 33)

Wilhelmi and a neighbour, Max Weber, fought for the Boers in the Anglo-Boer War and both were taken prisoner. Wilhelmi was sent to Germany where his wife had gone but when they returned to South Africa, they found their house had been burnt down. They therefore built a second house in 1910 known as the Weber House. This house is in 15th Street Parkmore and the Sandton Historical Association wishes to have it declared an historical monument as it has been threatened by the widening of the road. Juliet Marais Louw points out that its significance lies in the fact that it typifies its time and, as a farmhouse, played an important role in the development of the Rand (Louw 1983: 23-25)

In 1937 Elsa Wilhelmi sold about 40 acres of land to a building contractor named Philip Arnold. Arnold built his home on the land and this house is now known as the Field and Study Centre. Philip Arnold died in 1956 and Mrs Arnold and her son lived on in the house. They died in 1972 and 1974 respectively and first option on the house was left, in Wolfgang Arnold's will, to Sandton (Louw, 1980: 30).

Another interesting property in the Sandton area is Tara. On William Nicol Drive in Hurlingham, stands a notice which reads: TARA: The H. Moross Centre. "Tara" is the name of the original house built on the property in Cromartie Road, Hurlingham in the late 1930's and the name Moross is that of Dr Hymie Moross who developed Tara into a hospital of national importance.

The first person to develop this property was Walter Frederick Tillett who was born in Ireland in 1887. In the 1930's he was an established builder in Kimberley. He met his wife, Margaret, a nurse, when he was ill. Tillett obtained a contract to build Orlando township, now part of Soweto, while he himself lived in Parkview where he also built many houses in streets he named after places in Ireland such as Kilkenny and Kildare.

In 1938 he bought 36 acres in the new suburb of Hurlingham and erected a house which was called Tara as it was reminiscent of County Meath in which the Hill of Tara had been a royal residence and the scene of many important gatherings. There is a song about this historical Tara the first line of which reads: "The harp that once through Tara's halls . . ." This decided the family to use the harp as well as the shamrock as their motif and these were woven into the design of the wrought iron railings.

The house was sold to the South African government in 1942 and in 1945 became a military hospital. Dr Hymie Moross became the medical superintendent in 1946 and it became a place of healing for the mentally sick. (Reid 1986: 13)

Another place of historical interest is the Douglasdale Farm. This farm was granted to P.E. Labuschagne on 26 July 1859 as Witkoppen by President Kruger. In 1904 part of this farm, now known as Douglasdale, was bought by a Scot, Thomas Douglas. He had

been born in Scotland in 1863 and came to South Africa in 1890, working first in Klerksdorp as a carpenter, later in Kimberley and finally in Johannesburg where he had a building business.

The Douglasdale farmhouse is one of the oldest houses left in Sandton today. It was built in 1905 and faces south in typical Scots fashion but is of traditional Transvaal style, having a stoep on three

sides and steps leading down from a central balcony (Reid, 1980: 5). The western By-pass which was completed in 1979, now cuts the farm in two and there is a housing development along the east side of the dairy.

These are some of the places of interest of Sandton. What follows is the questionnaire for the excursion around these places of interest.

Questionnaire: The Search for Sandton's secrets.

Instructions.

1. Keep close to your teacher.
2. Look at each site carefully.
3. Refer to the time-line to see when the places were built.
4. Answer the questions carefully and where necessary do sketches.
5. Do not touch anything in the places we visit and do not litter.

Activities.

LONE HILL

1. Draw Lone Hill in the space:

3. Draw the Stone Age painting.

4. Where do you think the Nottens got the granite for their house?
5. In the graveyard on the north-eastern side of the koppie are the graves of Anna and S.J. Notten, as well as that of Philemon Rabitsi. Who do you think he was?
6. Compare Lone Hill in prehistoric times and now.

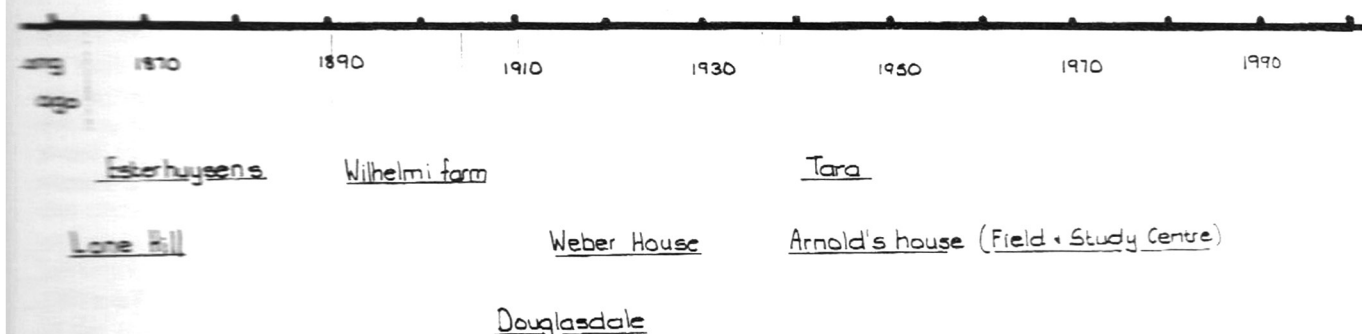
Prehistory

Now

2. Why do you think that the San chose this place to live?

Time Line

Excursion No 1.



ESTERHUYSEN MONUMENT

1. What is the name of the farm on which the monument stands?
2. Who is buried beneath the monument?
3. Make your own sketch of the monument:

4. What is written on the monument?
5. When was it erected and by whom?
6. Why were these people important enough to have a monument erected to have a monument erected for them?
7. Why was 30 October 1982 an important date for Sandton?
8. When you get back to school write a paragraph on an exciting event that happened to this family.

THE WILHELMI FARM 1890

1. What was the name of the farm on which the Wilhelms settled?
2. What did they use to build their house?
3. What types of trees abound in this area?
4. How and why did they get here?
5. Why is the house in ruins?
6. Sketch the ruins for our Sandton scrapbook.

WEBER HOUSE 1910

1. Who owned the land which this house is built?
2. Who built the house?
3. Why do you think verandahs were needed?

4. What has made the Sandton Historical Association very happy concerning this house?
5. Why would a house like this be important?

DOUGLASDALE FARMHOUSE 1905

1. In which direction does the house face?
2. Why would it have been built like this?
3. What type of roof does it have?
4. Why was the large verandah necessary?
5. What used to be in front of the house?
6. What type of windows does the house have?
7. Look at the fireplaces. What do they tell you about the way people lived at that time?
8. Describe the taps and soapdishes in the bathroom.
9. Are they the original ones? Give a reason for your answer.
10. Draw these beautiful objects for our Sandton scrapbook.

11. What were the other buildings on the farm used as?
12. Draw some of the antique farm equipment.

TARA

1. Why was the house given the name "Tara"?
2. When you compare this house with others o

the trail, do you think the Tilletts were wealthy or not? Give reasons for your answer.

3. What is the design you can see on the windows?

4. Why did the Tilletts use this design?

5. Sketch the motif.

6. What are the ceilings known as?

7. Why don't we use these ceilings any more?

FIELD AND STUDY CENTRE

1. Who built this house?

2. From whom did they buy the land?

3. What sort of people do you think lived in this house?

4. Why are there palm trees in front of the house?

5. Compare the houses of the Wilhelms and the Arnolds.

Wilhelmi House

Arnold House

BIBLIOGRAFIE

AUSUBEL, D. 1969: **Readings in school learning**. New York: Rinehart & Winston.

BIGGE, M.L. & HUNT, M.P. 1965: **Psychological foundations of education**. New York: Harper & Rowe.

BRUNER, J.S. 1974: **Beyond the information given: Studies in the psychology of knowing**. London: George Allen & Unwin.

CLARIZIO, H.F. et al. 1970: **Contemporary issues in educational psychology**. Boston: Allen & Bacon Inc.

CROW, L.D. & CROW, A. 1964: **Human development and Learning**. New York: American Book Co.

DIX, B. 1981: **Down among the deadmen**. In: Teaching History, June 1981, No. 30 p. 3-7.

DOUCH, R. **Local history and the teacher**. London: Routledge.

GOSDEN, P.J. & SYLVESTER, D.W. 1968: **History for the average child**. Oxford: Basil Blackwell.

LOUW, J.M. 1976: **Wagon-tracks and orchards**. Johannesburg: Donker.

LOUW, J.M. 1980: **The prehistory of the Field and Study Centre**. Sandton Historical Association publication.

LOUW, J.M. 1983: **Why the Weber house should be preserved**. Sandton historical association publication.

MAARSCHALK, J. 1974: **Die didaktiese betekenis van die heuristiek**. RAU: unpublished M.Ed. dissertation.

MEYER, A.E. 1965: **An educational history of the western world**. New York: McGraw Hill.

MONTESSORI, M. 1965: **The Montessori method**. Massachusetts: Robert Bentley.

NOTTEN, J.W.A. & POOL, J.F. 1980: **Lone Hill**. Sandton Historical Association publication.

REID, A. 1986: **Tara - The house and the people**. Sandton Historical Association publication.