

Can biology learning process be improved through language

[Education](#), [Learning](#)



This action research aimed to better the acquisition and instruction of biological science at Form III degree by bettering the linguistic communication literacy of the pupils. The survey was both qualitative and quantitative as both attacks were related to each other for breath and deepness of analysis, which helped in the bite of information. In this chapter on methodological analysis I explain why action research was the best pick harmonizing to me, what were the analysis processes, ethical considerations, cogency, dependability and reflexiveness. The definition of an Action Research and the model of the Action Research survey, dwelling of planning, moving, detecting and reflecting are besides discussed.

Research paradigms

The intent of this research is to better Biology instruction and learning through linguistic communication literacy. In order to make up one's mind which research methods to utilize it is of import to hold a expression at different research theoretical accounts. Research workers have assorted positions about the universe and hence, utilize different logics and techniques to look into it. Consequently there have been two chief viing theoretical accounts which have evolved: the rationalist besides called quantitative paradigm and the interpretative besides known as the qualitative paradigm (Hammersley & A ; Atkinson, 1997 ; Bassey, 1995) . A paradigm can be defined as `` a basic belief system or universe position that guides the probe " (Guba & A ; Lincoln, 1994, p. 105 in Denzin & A ; Lincoln, 2000) . The following efforts to cast some visible radiation on the rationalist and interpretative paradigms.

The rationalist paradigm

The rationalist is linked with a world 'out there' in the universe that exists whether or not, irrespective of who observes. Harmonizing to Cohen et Al. (2000) , `` The ontological and epistemic footing of positivism is a belief in a individual independently being world that can be accessed by research workers following an objectivist attack to the acquisition of cognition. " The research worker and the object of research are assumed to be independent entities. The rationalist can analyze the object without act uponing it or being influenced by it. Whenever any influence is recognized, schemes are adopted to command it.

The methodological analysis of the rationalist paradigm is based on the theoretical account of the societal scientific disciplines. The perceiver is separate from the entities that are capable to observation(Bassey, 1999 ; Silverman, 2000) . Furthermore, harmonizing to Opie (2004) , `` taking a rationalist attack to educational research will about surely lead to processs, which result in the aggregation of quantitative informations and proving hypotheses, such as informations from questionnaires and difficult facts from experimental work. " The rationalists do not take into account their values. They carefully manipulate variables to forestall outcomes from being improperly influenced.

The interpretative paradigm

World is seen as a concept of a human head in the interpretative paradigm. Peoples perceive and so interpret the universe in ways, which are frequently similar, but not need fully the same. The interpretative paradigm is

qualitative. This paradigm is concerned with significances and the manner people understand things and forms of behaviours (Denscome, 1998) . As Blaikie (2000) provinces in Mason, J. (2002, pp 56)

Interpretivists are concerned with understanding the societal universe people have produced and which they reproduce through their continuing activities. This mundane world consists of the significances and readings given by the societal histrions to their actions, other people 's actions, societal state of affairss and natural and humanly created objects. " (2000: 115) .

Furthermore, harmonizing to Mason, J. (2002, pp 56) , `` interpretative attacks, nevertheless, is that they see people, and their readings, perceptual experiences, significances and apprehensions, as the primary informations beginnings. Interpretivism does non hold to trust on `` entire submergence in a scene ' hence, and can happily back up a survey which uses interview. "

The interpretative research worker has a detailed, rich and empathetic description, written straight and slightly informally (Bassey, 1995) .

Research paradigm for my research

Harmonizing to Grim et Al (2006) the divide between quantitative and qualitative societal methodological analysiss is so dramatic. A semi quantitative research I believe suited me best. For the intents of this survey, foremost of all the qualitative attack was adopted because it is in line with the thought of Creswell who states that the end of qualitative research `` is to trust every bit much as possible on the participants ' positions of the state

of affairs being studied " (Creswell 2003, p. 8) . . Furthermore, this method was chosen because the research worker 's function will be that of a non-participant perceiver. Interviews, group treatments, observation and contemplation field notes, research journal, and analysis of papers were done. The quantitative process on the other manus were besides used for illustration through questionnaires in my methodological analysis.

Action research

Action research is a procedure in which participants examine their ain educational pattern consistently and carefully, utilizing the techniques of research. It is based on the undermentioned premises:

- Teachers work best on jobs they have identified for themselves
- Teachers go more effectual when encouraged to analyze and measure their ain work and so see ways of working otherwise
- Working with co-workers helps instructors in their professional development (Watts, 1985, p. 118) .

Implicit in the term action research is the thought that it begins with a rhythm of presenting inquiries, garnering information, contemplation, and make up one's minding on a class of action. Typically, action research is undertaken in a school scene. It is a brooding procedure that allows for enquiry and treatment as constituents of the `` research. "

Frequently, action research is a collaborative activity seeking for solutions to jobs experienced in schools, or looking for ways to better direction and increase pupil accomplishment. Rather than covering with the theoretical,

action research allows practitioners to turn to those concerns that are closest to them, 1s over which they can exhibit some influence and do alteration. Furthermore, the procedure of action research assists pedagogues in measuring demands, documenting the stairs of enquiry, analysing information, and doing informed determinations that can take to coveted results.

Action research involves a self-reflective spiral of planning, moving, detecting, reflecting and re-planning. It provides flexibility well-suited to altering state of affairs due to its cyclic or coiling procedure. Within each rhythm there is action followed by critical contemplation.

Stairs in Action Research

Within all the definitions of action research, there are four basic subjects: authorization of participants, coaction through engagement, acquisition of cognition, and societal alteration. In carry oning action research, we construction modus operandis for uninterrupted confrontation with information on the wellness of a school community. These modus operandis are slackly guided by motion through five stages of enquiry:

1. Designation of job country
2. Collection and organisation of information
3. Interpretation of information
4. Action based on information
5. Contemplation (Ferrance, E. 2000, p. 6)

I have chosen to make action research because it is a brooding probe of a problem. The procedure will get down with the development of inquiries, which will be answered by the aggregation of informations. I will roll up informations, analyze, and construe all the consequences. Furthermore, I adopted the action research theoretical account because it is simple, systematic, and comparatively easy to utilize in the schoolroom, but most of all, appropriate for my research rubric. This theoretical account besides provides me with the chance to analyze and reflect on my instruction schemes and manners in an effort to increase linguistic communication literacy among my signifier 3 pupils in the acquisition of biological science every bit good as bettering my ain pattern and hence, lending to my ain uninterrupted professional development.

There are several qualities of action research which allow it to prosecute strict apprehension:

The engagement of all interested parties provides more information about the state of affairs

Critical contemplation in each rhythm provides many opportunities to rectify mistakes. This is particularly so when there are rhythms within rhythms within rhythms, and where the critical contemplation is characterised by a vigorous hunt for disconfirming grounds.

Within each rhythm the premises underlying the programs are tested in action.

Research rhythms

A normally known rhythm is that of the influential theoretical account of Kemmis and McTaggart (1988) who believe in - program, act, observe, reflect ; and so, in the visible radiation of this, program for the following rhythm. It is the cyclic nature of action research, which allows responsiveness. To my head, a cyclic procedure is of import because it gives more opportunities to learn from experience if there is existent contemplation on the procedure and on the results, intended and unintended. Furthermore, Action research allows us the chance to determine and polish our ain instruction and to construct on our ain successes. The process for this research will be chiefly learner centered, where the pupils will learn by making.

Research Instruments

This subdivision contains description on how I conducted my research, with peculiar accent on research instruments. These are important in the procedure of roll uping information to reply the research inquiries and/or confirm or reject premises. There are different types of information aggregation instruments, each with its ain specific properties, thereby getting specific utilizations. In this peculiar research, the observation agenda, research journal, equal observations, artifacts, and concentrate groups were used as instruments to roll up informations, in an effort to depict to the full and every bit amply as possible, whether the acquisition and instruction of biological science improved through linguistic communication literacy.

Observation agenda

A really common method of research instrument is called observation agenda. In this instance the research worker has the function of non-participant perceiver. Non-participant observation involves the research worker acquiring into state of affairss where behaviour, interactions, and so on can be observed at first manus (Harvey & A ; Mc Donald, 1993) . I undertook this method and walked about, casually, at the location to be researched, at a good clip to carry on research. The principle for utilizing observation as a tool for information aggregation was to measure the pupils ' public presentation and how they reacted to assorted schemes. Furthermore, this research instrument was used because it normally collects really dependable, high-quality information, and is regarded as being a cost effectual method of carry oning research. A big sum of information could besides be gathered in a short clip.

As Cohen et Al (2000, pp 305) says, 'Observation enables research workers to understand the context of programmes, to be open-ended and inductive, to see things that might otherwise be unconsciously missed, to detect things that participants might non freely speak about in interview state of affairs, to travel beyond perception-based informations and to entree personal-knowledge. ' Furthermore, as Cohen et Al (2000, pp 315) provinces, `` Observation methods are powerful tools for deriving penetration into state of affairs. As with other informations aggregation techniques, they are beset by issues of cogency and dependability. Even low illation observation, is itself extremely selective, merely as perceptual experience is selective. ''

Furthermore, the covert engagement observation was used (that is where the research worker does not uncover the grounds of her observation) during normal biological science categories to cut down the component of prejudice to bring forth more dependable and valid information. This was done to decrease the incidence of the presence of the research worker to impact the behaviour of the pupils under survey. I wanted all the participants to act usually although they were expected to pass on merely in English linguistic communication every bit far as possible. In footings of cogency besides, experimental research findings are considered strong. Trochim (2000) states that cogency is the best available estimate to the truth of a given proposition, illation, or decision. Harmonizing to him, experimental research findings are considered strong in cogency because the research worker is able to roll up in depth information about a peculiar behavior and the usage of multiple beginnings of information helps increase cogency.

Structured observation

Structured observations utilizing checklists coupled with a evaluation graduated table was used during the survey. The checklists allowed me to corroborate if a pre-specified behaviour was present. The usage of a checklist besides allows to concentrate on the precise facets of behavior to be analysed and circumvents a superficial overview of the schoolroom kinetics (Macintyre, 2000) .

Informal observation

Informal observations were planned when transporting out the assorted lessons so as to enter information in a methodical manner in the research

journal. This allows for contemplation on the troubles encountered and the behaviour of pupils.

Interviews

Harmonizing to Freebody, P. (2003, p 137) , `` Interviewing is best understood as an interactive event in which members of a civilization draw on and reconstruct their shared cultural cognition, including their cognition about how members-of-their-certain-kinds routinely speak in such scenes. "

Informal interviews were carried out with the focal point group pupils. The feedback obtained from the interview was most constructive because the pupils were critical and had a different perceptual experience of the instruction and learning procedures from that of the instructor. They were a really enriching beginning of information because it was the pupils ' voice could be heard. The informal interviews were besides really valuable because they provided instant feedbacks on the research procedure, and helpful suggestions for betterment.

Questionnaires

Students questionnaires were designed to assist the instructor research worker on her pattern and to inform her on future work.

The instrument I used to enter observations was a research journal. For each observation, the day of the month, clip, continuance, and description of information observed were written. I jotted down notes in a journal that served as memory assistance and afterwards every bit shortly as possible full field notes were constructed. (Hoepfl, 1997) .

Peer observations

A co-worker from the Biology section was asked to go to some of the Sessions and to observe down his observation in a checklist that was provided to him. He was asked to look for direction of resources, direction of clip, whether the aims of the lesson was met, schoolroom direction, and category engagement (Refer to peer checklist in appendix ****) . This instrument was used to triangulate information and to formalize the action research.

Artifacts

Student 's books and work were collected for rating. For this intent, I designed a marker strategy, establishing on which I have judged the quality of work of the pupils. The tagging strategy consisted of different standards. Each standard was allocated 4 Marks, giving a sum of 20 Marks. These tons were so compared to estimate any betterment or advancement in pupils ' public presentation.

Focus Groups

A focal point group is another first-class type of informations aggregation instrument, which has specific features, properties, and uses. Focus groups are meetings affecting groups of persons who have been selected by the research worker, who are peculiarly observed for the specific research subject. In this regard, frequent meetings were organised affecting the nine pupils who were observed for the research. Through these meetings, I tried to happen out from pupils if the schemes that were employed in the lessons were making all the pupils. It was after run intoing the pupils that I could

acquire a better penetration on the activities to transport out to better the authorship of pupils.

Sampling

Sampling is important for analysis. For the intent of this thesis, I carried out purposive sampling. Hence, I chose a purposive sample of 30 % of 27 pupils in a signifier 3 category where I work. This sampling is representative of the mark population. The pupils are of low ability but among them, there are some pupils who tend to make better than the others. Hence, for trying, 30 % of the population was chosen stand foring a figure of 9 pupils. I sampled them as follows ; three high winners, three norm and three low winners. However, I would wish to indicate out here that when I refer to high achiever and low winner, it is non in its actual sense because all the pupils are of low ability. Here, high winner refers to those pupils who ever come out foremost, 2nd and 3rd in the tests and low winner refers to those who tend to be ranked among the last in the category.

Student 's Profile

The population of involvement for this survey consist of 27 pupils (aged 14-15) in a signifier III category of a miss 's urban secondary school. The pupils joined the college with really hapless C. P. E. consequences. The pedagogues have to work hard with these pupils to do them come out with winging colorss in the S. C. test. The bulk of them belong to below middle-class households. This peculiar category was selected because it is the lone signifier three category where I work.

Triangulation

Harmonizing to Silverman (2008) triangulation is a research scheme whose major premise is that sociological research is a find procedure designed to acquire an nonsubjective truth that may be systematized as a formal theory of societal construction and procedure. It assumes that looking at an object fro more than one point of view provides research workers and theoreticians with more comprehensive cognition about the object. Furthermore, harmonizing to Freeman, D (1998, pg 96) , `` triangulation is about what makes something hardy, able to back up its won weight, and hence reliable. Triangulation information beginnings are a affair of where you acquire your information ; triangulation aggregation methods are affair of changing the ways in which you gather that information. " Therefore, to minimise defects for the action research, I made usage of cross- scrutiny as an of import manner of look intoing that the grounds collected is every bit accurate as possible. The assorted research instruments used helped in triangulating information and render the undertaking strong in footings of cogency and dependability.

The triangulation method used as information aggregation provided a step of cogency affecting the assemblage of information from three different points of positions, viz. , that of the instructor, the pupils and a participant perceiver.

As Silverman (1998) in Freebody, P. (2003, p 168) , `` qualitative research workers in instruction demand to take earnestly the demands for dependability and cogency. "

Denscombe, M. (1998, pg 85) , `` Sing things from different position and the chance to confirm findings can heighten the cogency of the informations. They do non turn out that the research worker has 'got it right ' , but they do give some assurance that the significance of the information has some consistence across methods. "

As Silverman (1998) in Freebody, P. (2003, p. 168) , reveals qualitative research workers in instruction demand to take earnestly the demands for dependability and cogency. And harmonizing to Bassey (1999, p. 75) , dependability is the extent to which a research fact or determination can be repeated, given the same fortunes, and cogency is the extent to which a research fact or determination is what it is claimed to be. Furthermore, Kirk and Miller (1986 pp 20) define dependability as 'the grade to which the determination is independent of inadvertent fortunes of the research ' . Furthermore, Silverman (2001, pp207-208) points out that look intoing the dependability is closely related to guaranting the quality of field notes.

My research survey involved both qualitative and quantitative information. The qualitative and quantitative researches seek for both dependability and cogency to supply a agency of garnering information. Denscombe (1998, p. 85) , points out seeing things from different position and the chance to confirm findings can heighten the cogency of the information. The writer besides reveals that they do non turn out that the research worker has 'got it right ' , but they do give some assurance that the significance of the information has some consistence across methods. This was done by the usage of the triangulation to back up the truth of the information gathered

during my survey. The triangulation method used as information aggregation provided a step of cogency affecting the assemblage of information from different points of positions, viz. the pedagogues, students and co-workers.

Reflexivity

Carr and Kemmis (1986) commented reflexiveness as being:

`` Social life is automatic ; that is, it has the capacity to alter as our cognition and thought alterations, therefore making new signifiers of societal life which can, in their bend, be reconstructed. Social and educational theories must get by with this reflexiveness ; the 'truths ' they tell must be seen as replies to peculiar inquiries asked in the rational context of a peculiar clip. "

In connexion to my research undertaking, I applied reflexiveness by tie ining my research with all those concern viz. the school where I am working, my co-workers and the pupils involved in the survey. It was really of import for me to obtain information, whether quantitative or qualitative, which are reliable to the research I am undergoing. I made it really clear to all those concerned that the research I am making will be good to the school, to the pupils and others pedagogues in this field of survey and last but non least to assist me in my professional development in being an pedagogue.

Ethical considerations

As Watt (1995, p. 1) mentioned, run intoing ethical standards leads non merely to a comparatively clear research scruples but to better research.

Indeed Bassey (1999, p. 73) further refer research morals under three headers: regard for democracy, regard for truth and regard for individuals. I

conducted my survey following the regulations of educational morals. In order to keep rigorous ethical criterions to transport out the research, it was of import that I follow an established ethical guideline. So, at the really beginning of the research, the name of the school where the survey was carried out was non mentioned for the interest of confidentiality. Before get downing my research, I seeked the permission and credence of the Rector of my school . The curate was informed about my research, its purpose, the agencies of roll uping the information and the deductions of the survey for the schools, my section and the students. A missive was addressed to the parents through the selected students to corroborate engagement in the survey. I wanted the participants to be in a place to give informed consent (Cohen et al. , 2000) sing their engagement in the research. The pupils were informed about the intent and purpose of the survey and that they will be chosen as a sample to transport out a survey.

The individuality of all participants was protected and anonyms were used in the thesis for confidentiality. The mark group was made cognizant that their work was being observed for the intent of research. The pupils were told that their work would be taken as artifacts and whatever observation would be made, would stay confidential, and in no manner be used against them. No parent and pupil had any expostulation.

Decision

An action research is the best-organized procedure of happening solutions to jobs through a planned and systematic aggregation, analysis, and reading of information. Therefore, through this action research, I want to portion my

cognition and experience about the betterment of instruction and acquisition of biological science through linguistic communication literacy, to fellow co-workers involved in the educational field.