

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 INTRODUCTION

This chapter discusses the research design chosen for this study and the methods employed in the data-collection process. The following aspects will be addressed:

1. The nature of the research design and the rationale behind its choice;
2. the choice of research methods for data collection purposes;
3. field research, which will include the research site; the sample; and
4. the sampling techniques, pre-testing, ethical aspects and problems encountered during the field-research stage.

This study is both theoretical and empirical in design. An extensive literature review was first undertaken to inform the researcher about the various research methods frequently used in social sciences in general, and in educational settings in particular. Their strengths and limitations were brought to the fore. The review also informed the researcher on how similar language studies were conducted elsewhere. This exercise proved to be academically rewarding. As a result, an informed decision could be made about which research methods to use to deal with the practical aspects of this study and thereby help to answer the main problem under investigation, as well as its sub-problems.

CS in the classroom is a phenomenon that is poorly understood. It is still not clear whether it takes place because its users (both teachers and learners) are conversant in the languages they employ in the classroom, in this case, English as the LoLT, and Setswana as the national language, or whether it is because they lack proficiency in one of the languages or both. To that effect, it was necessary for the researcher to choose a research design that would enable in-depth investigation of this phenomenon and engage research methods that would facilitate the collection of data that could be used to answer the following questions raised in the study:

1. What is CS in the classroom?
2. Why does it occur; how; and when?
3. Is it didactically beneficial to the teaching and learning situation or not?

In this regard, the researcher decided to use both qualitative and quantitative research methods in the gathering of data. The nature of the problem under investigation necessitated the choice of the two research methods to obtain the data first-hand in the classroom as the phenomenon of CS occurs (the qualitative method); and then to obtain the views of the participants about the phenomenon (the quantitative method).

Thereafter, the data were analysed and interpreted in relation to the problem being researched, and it was determined whether the results from each research method converged or diverged.

The researcher used the method that is now popularly known as ‘qual-quant’ (Morse, 1991, in Creswell & Plano Clark, 2007: 60) because a combination of research methods was used in the same study in the hope that they would all arrive at the same conclusion in relation to the main research question. This strategy is known as triangulation (Brannen (1992); Mouton and Marais (1992); Cohen and Manion (1994); Denzin (2003); Leedy and Ormrod (2005); Creswell and Plano Clark (2007)). In a study such as this one, in which a researcher investigates an identifiable phenomenon, and human participants are involved, a multi-faceted approach is necessary to enable the researcher to investigate the phenomenon from various angles.

3.2 THE QUALITATIVE RESEARCH METHOD

The investigation of CS in the classroom takes place in a teaching and learning situation. Hence it was important for the researcher to gather raw data from the classroom while teaching and learning were in progress. The observation technique, which is a form of qualitative research, was deemed suitable for this purpose. It enabled the researcher to focus on the phenomenon as it occurred in a natural classroom environment, and to collect the data that will be qualitatively analysed and interpreted to gain a deeper understanding of the phenomenon. Qualitative design is defined by Bodgan and Taylor (1975, in Guy, Edgely, Arafat and Allen, 1987: 257-258) as:

... research procedures that produce descriptive data: people's own written or spoken words and observations. This approach directs itself at settings and the individuals within those settings holistically.

The qualitative research method enabled the researcher to verbatim record the utterances of the participants, and to also observe what was happening in the classroom during lessons. The result was rich data to be categorized and interpreted according to common themes in order to deal with the main theme of the study.

Although the qualitative research method has various types of formats, for example case study, ethnography, phenomenological study, grounded theory, content analysis and historical studies, the case-study design was preferred. The case-study design allows for in-depth observation of a particular phenomenon that is little or poorly understood as it occurred during the utterances of the participants for a defined period to obtain the data first-hand (Leedy & Ormrod, 2005: 135). This was the case in the present study; both the teachers and learners were observed in the classroom to determine if they used CS and how and when they used it.

In a social setting, CS is clearly understood. Various scholars agree that it is a common phenomenon in speeches of bilingual and multilingual speakers in many places, and that it does not indicate a lack of competence on the part of the speaker in any of the languages concerned, but is a result of complex bilingual skills (Auer, 1984: 1; Kieswetter, 1995; Milroy & Muysken, 1995; Myers-Scotton, 1993a) to mention but a few. In contrast, CS in education is still a debatable issue. To that effect, Kamwangamalu (2000: 60) pointed out that CS in educational settings is neglected because of the stigma it carries, and that it is considered to be a sign of linguistic deficiency on the part of its users. The present study, therefore, will either affirm or refute this assertion.

According to Mouton (2005: 149), a case-study approach is usually used for a smaller number of cases (usually fewer than 50) to provide an in-depth description. In the present study, this is also the case, as only four of 27 senior secondary schools in Botswana (The Ministry of Education Establishment Register for Secondary Schools and Colleges of Education, 2003/4) were the focus of this study. This is what Leedy

and Ormrod (2005: 135) refer to as a multiple or collective case study. The choice of the case-study approach was also based on a number of advantages associated with it that the researcher also found useful. The case-study approach has high construct validity in that the data are collected first-hand by the researcher on site. Thus it allowed for in-depth insights, as the researcher witnessed what was taking place through observation of lessons in the classroom, and also collected the data through audio-tape recordings for analysis later. This method promoted the creation of rapport between the researcher and the participants due to the time that the researcher generally spent at the schools, and in the classes in particular (Mouton, 2005: 150). The latter became valuable later, after the researcher had left the research sites. Where the researcher needed extra information from any of the four schools, such requests were normally made telephonically, and schools were always willing to assist.

There are, however, a number of disadvantages associated with this type of approach. It is time-consuming; large amounts of data are often collected, and it takes long for the researcher to collect the data at the research site (Leedy and Ormrod, 2005: 135). The researcher also experienced these problems. Much time was spent in the classes observing and audio-tape recording lessons, and simultaneously taking down notes that resulted in the collection of a lot of data. At the end, the researcher observed 197 lessons and collected a total of 2 461 questionnaires (from both the teachers and learners). While the former may be viewed as a large sample for a qualitative study, this is not so in this research study. Bullock, Little and Millham (1992, in Brannen, 1992: 88) pointed out that often qualitative studies can also involve a large sample. The amount of data collected also affected the amount of time spent later when analysing it. However, to reduce the time, the researcher analyzed the data collected from lesson observations while the research was in progress. Therefore, new issues that emerged were identified and then included as part of the quantitative investigation in the form of a questionnaire interview. This consequently eliminated the need for another form of interview, namely, a face-to-face interview.

Despite the length of time spent at the schools and consequently on the rapport established with some of the participants, the researcher was mindful of the need to maintain objectivity at all times, and guarded against subjectivity creeping into the way in which the situation was viewed during the data-collection stage, and how results

were interpreted later. The enormous amount of data that was gathered from the research also did not divert the attention of the researcher from focusing on the main subject of the study.

Apart from the data collected through lesson observations, additional data were collected in the form of the syllabi and other relevant documents to better inform the researcher about what was taking place or supposed to take place in the classroom.

As mentioned, only a few schools were the focus of this study, and all were in the same region as per the Ministry of Education grouping of schools into regions, Therefore, the results of this study may not be generalized. However, generalization was not its prime objective. The main objective was to analyse the nature of the phenomenon that occurs in the classrooms of the schools in the study, its causes, and whether or not it was of any educational value. Nonetheless, the data collected through the literature review described in the previous chapter, and through the participants' self-reports described in the subsequent chapters of this report, provide sufficient information to suggest whether its results can be generalized and be used for similar situations. Otherwise, case studies conducted in similar situations would be necessary to establish whether the research results would be similar.

3.3 THE QUANTITATIVE RESEARCH METHOD

The quantitative research method was also used in the investigation of CS in the classroom in addition to lesson observations. A survey technique in the form of a questionnaire was used to solicit the opinions and views of the participants (both the teachers and learners) on the phenomenon of CS. According to Mouton (2005: 153) the results from the quantitative research method have the potential to be generalized to larger populations if appropriate sampling design had been done; if the questionnaire was properly constructed, it could have a high measurement reliability; and high construct validity if proper controls were implemented.

This form of research method necessitates that the researcher identifies, formulates and standardizes the variables relevant to the study. A questionnaire was therefore developed in accordance with the requirements of validity and reliability for use in the

data-collection process. The responses of the participants were then quantified, statistically analysed and the interpretations thereof were expressed in nominal and percentage values. The results were then used to answer the research questions that collectively address the main focus of the study. This form of research method was preferred as it allows for the generalization of the research results to the wider population within the schools in the study.

The quantitative research method employs a number of data-collection techniques that produce data that can be summarized through statistical analysis. In the present study, the researcher used the survey research, also known as a descriptive survey or normative survey (Leedy & Ormrod, 2005: 183).

A questionnaire is the most commonly used data-collection method of all quantitative designs in various areas of human activity. However, it requires careful attention in its construction otherwise its questions may not address the main research problem. Data collection is often in the form of an interview that is a series of questions administered to willing participants in any of the following forms: a face-to-face interview, a telephone interview, or a questionnaire interview. In this case, the questionnaire-interview method was used.

A questionnaire can be either structured or semi structured. The former involves a list of questions of which the responses are in the form of a checklist and a rating scale, known as the Likert Scale (Leedy & Ormrod, 2005: 185; Rea & Parker, 2005: 68; Frazer & Lawley, 2000: 20). The latter is very similar to the structured questionnaire except that it also contains open-ended questions designed to seek the respondents' own opinions in more detail, or to seek clarification on a preceding question. In the present study, a structured questionnaire was used because it mainly comprised close-ended questions. Although the normal trend is to rate the responses by using a rating of 1 to 5 or 1 to 7, the researcher decided to use a rating of 1 to 3 or 1 to 4. She found this suitable for this study, and the responses received were equally satisfactory. While reviewing the literature on methodology, the researcher did not come across any literature that stated that one should strictly adhere to the rating of 1 to 5 or 1 to 7. Therefore, the researcher treated the recommended ratings as a guide. Other

researchers (Desai, 1997; Strydom, 2002; Magogwe, 2005) who also conducted studies in sociolinguistics and/or language studies, used similar ratings.

A questionnaire has a number of advantages and disadvantages. Its *advantages* are as follows:

1. If it is structured, it is easy to complete and therefore saves time.
2. It can be handed out or mailed to participants in the study who can complete it in their own time in the comfort of their homes or offices, without pressure of time or of the presence of the researcher.
3. Anonymity is assured, as respondents are not expected to state personal details, such as their full names on the questionnaire. As a result, respondents are generally more honest in this type of interview than in a face-to-face interview (Frazer & Lawley, 2000; Creswell & Plano Clark, 2007: 54 -55; Leedy & Ormrod, 2005: 185).

The *disadvantages* of such a questionnaire are as follows:

1. The questionnaire often has a low return rate.
2. Its interpretation depends on the language skills of the respondents.
3. As such, its questions may be subjected to misinterpretation if the respondents have poor language skills.
4. Similarly, its clarity depends on the language skills of its composer. Should the researcher have poor writing skills, the clarity and the validity of the questionnaire may be compromised.
5. Where open-ended questions are included, the writing skills of the respondents are crucial, otherwise a poorly presented response may affect the interpretation of questions in the questionnaire.
6. A structured questionnaire is not flexible in that respondents are expected to respond to the questions contained in the questionnaire in the manner that has been prescribed. Consequently, it does not give much room for deeper probing and in-depth response (Czaja & Blair; 2005; Creswell & Plano Clark, 2007).

Notwithstanding the disadvantages outlined above, this data-collection technique was found to be suitable for specific parts of the study, because it was necessary to seek the views and opinions of the respondents in a systematic manner and then quantify them for analysis and interpretation. This technique was necessary to compare its results with those obtained through lesson observations and to ascertain whether they yielded either similar or contrasting results. To ensure a good return rate, the researcher personally distributed the questionnaire to the teachers in the study, and ensured that the majority was collected before departure from the research sites. For instance, in School One, 34 questionnaires were handed out to the teachers, and 29 were returned. At School Two, 28 questionnaires were returned out of 37 that were distributed. At School Three, 20 questionnaires were returned out of 28 that were distributed to the teachers in the study. At School Four, 31 teachers participated in the study, and all were given questionnaires to complete -- 24 questionnaires were returned. Overall, 94 questionnaires were returned out of a total of 130 that were handed out. The return rate was therefore 72%.

The questionnaire for the learners was administered personally by the researcher during class time and collected at the end of the class time allocated. During its construction, it was ensured that plain and simple language was used to avoid misinterpretation of the questions or a lack of understanding. The decision to administer the learner questionnaire within the class proved fruitful as the researcher was available for consultation when some of the items needed clarification. Therefore, incomplete questionnaires were kept to a minimum. The learners also treated the completion of the questionnaire with the seriousness it deserved, which resulted in a very high return rate. For instance, at School One, 687 questionnaires were administered and 662 were returned, which gives one a return rate of 96%. At School Two, 640 learners were involved in the study, and 574 questionnaires were returned -- a return rate of 89.6%, or 90 % rounded off. At School Three, 690 learners were involved in the study, and 620 questionnaires were returned, which gives one a return rate of 89.8% or 90% rounded off, as well. At School Four, 746 learners participated in the study, and 511 questionnaires were returned, which indicated a return rate of 68 %. In total, 2 367 questionnaires were returned out of a total of 2 763 that were handed out. Therefore, when calculated, an overall return rate of close to 86% was achieved.

The return rate of the teachers' questionnaires, while not as high as that of the learners, was also good.

Although the questionnaire was relatively long (it contained 232 items), it was easy to complete because nearly all the questions required a response in the form of a checklist based on the modified Likert Scale. This form of presentation also eliminated the problem of writing skills. Further probing took place through the inclusion of a few items that required a one-word response or a short sentence (11 in the teachers' questionnaire, and seven in the learners' questionnaire) to give the respondents an opportunity to provide extra information that may not have been covered by any of the items. Unfortunately, the majority of the respondents (both the teachers and learners) avoided such questions. This was a deficiency in the questionnaire interview. The objective of including some questions that required the respondents' own views or factual information about them that was not based on pre-determined responses, was lost. Notwithstanding this setback, the questionnaires were generally well answered, and the setback did not have adverse consequences on the findings derived from the data collected. Considering that items that required open-ended answers formed only a small part of the questionnaires, sufficient data were collected through close-ended responses that enabled the researcher to address the main research question.

3.4 RESEARCH SITE

The research site selected included four government senior secondary schools located in the North-East region of Botswana (cf. Map of Botswana showing secondary and technical schools attached as Addendum B). In this study, these are referred to as School One (S 1), School Two (S 2), School Three (S 3), and School Four (S 4). In total, there were two urban schools and two semi-urban schools. Schools One and Two are based in an urban centre and were hence regarded as urban schools in the study. Schools Three and Four are based in two different towns regarded as semi-urban centres owing to their relative proximity to the urban centre and their official status as administrative centres of the sub-regions. Therefore, the latter two schools are regarded as peri-urban schools in the study. School Three, like Schools One and Two, is in the north-eastern region, while School Four is in the Central region.

One of the main objectives for the selection of the research sites was to establish whether geographical location, among other factors, has an effect on CS in teaching and learning.

As aforementioned, the first three schools are located within the north-eastern region. This region was chosen for its rich cultural and language diversity. The urban centre serves as the capital city of this region. As an urban centre, it is highly cosmopolitan with different cultural and language groups represented, including non-citizens from different countries. Therefore, apart from Setswana and English, many other languages are spoken in the city and its vicinity, including Ikalanga that is spoken by the Ikalanga ethnic group -- the dominant ethnic group in this region. The Ikalanga ethnic group are well known in the country for their strong cultural and language affinity. They have successfully managed to keep their culture and language alive, despite the general lack of active government support for cultural and language diversity in the country (Nyati-Ramahobo, 2004). In addition, this city, owing to its relative proximity to countries north of Botswana, such as Zimbabwe and Zambia, has a sizeable population of nationals from those countries and beyond. Therefore, this region generally (and the urban centre in particular) is a melting pot of cultural and language diversity.

School Three is based in a town approximately a hundred kilometres north east of the urban centre. According to the authorities at the school, it is linguistically diverse since it admits learners from junior secondary schools from within its vicinity, as well as learners from junior secondary schools in the north-western region (especially from the northern part of the region that shares a border with Zambia). The main ethnic group from this part of the country is known as the Basubiya, and their language is known as Sisubiya. Sisubiya is not intelligible to speakers of either Setswana (the national language) or Ikalanga, the main language of the dominant ethnic group found in the region on which this study focuses.

School Four is situated in another town approximately a hundred kilometres north-west of the main urban centre. Although this town is officially treated as part of the sub-district of the central district, geographically it is closer to the main urban centre in the north east than to the administrative capital of the central region. The Ministry of

Education has recognized this fact, hence the classification of School Four as part of a cluster of senior secondary schools in this region. This seems more appropriate, as the residents of the town in which the school is based are culturally and linguistically more similar to the residents of the north-eastern region than to the residents of the central region.

These four schools provided fertile ground for linguistic investigation -- including an investigation of CS between English and Setswana -- due to the language diversity that exists there. According to the self-reports of the respondents obtained through the questionnaire interviews, Setswana is a second language and English is a third language for a sizeable population of both the teachers and the learners.

Before the researcher visited the schools, the following documents were sent to the headmasters of the four schools mentioned: a letter of self-introduction, together with supporting documents (a letter from the researcher's supervisor, and a copy of the letter of permission and endorsement obtained from the Ministry of Education in Botswana). In compliance with the research principle of informed consent (Leedy & Ormrod, 2005; Mouton, 2001; Czaja & Blair, 2005; Clough & Nutbrown, 2006; Creswell & Plano Clark, 2007), all these documents are available should any reader wish to see them. In the letter, the topic of the study was stated and a brief explanation of the study itself was given; that is, what it would involve and how it would be conducted. This was necessary so that the headmasters of the schools would be well informed about the study and could assist the teachers in preparing the information that would enable the researcher to get started with data collection upon arrival at the site. The topic was stated in more general terms so as not to influence the behaviour of the teachers and the learners. It was necessary to do so as the field research involved sitting in the selected classes; observing the lessons; and at the same time recording them. The topic of the research was given as "The role of language in teaching and learning". The researcher informed the schools about the expected dates of arrival and the expected duration of stay at each school.

Upon arrival at School One (at the beginning of June 2006), the administrative formalities were carried out and the Head of the Faculty of Humanities was requested to assist the researcher in preparing for the collection of the data. A meeting was

arranged to meet the senior teachers in the Department of Humanities, the subjects of which, namely English language and literature, Setswana, and History, were included in the study. The researcher was also introduced to senior teachers of Biology and Home Economics. During the briefing, the teachers were informed about what the field research would entail (that is, the grades involved; the number of classes required to participate in the study; the learners' ability levels; the subjects chosen; and how the data-collection process would be undertaken). The classes were randomly selected from both Form Four (F 4) and Form Five (F 5) for inclusion in the study. They were also informed that class observations would first be done, and that questionnaire interviews with both the teachers and the learners in the study would follow later. This arrangement would enable the researcher to go through the observation notes of each lesson; to listen to lesson recordings, and to synthesize the data first so that, should any issues were to emerge, they would be included in the next phase, which comprised the questionnaire interview.

The researcher was provided with information on the classes available, from which she randomly chose classes to participate in the study. Having chosen the classes, the teachers concerned had been automatically chosen for inclusion in the study. Their lessons in those classes would be observed, after which they and their learners would be asked to complete the questionnaires. However, before this commenced, the researcher was introduced to the teachers concerned. She briefly informed them about the objective of her visit to their school in general, and to their classes in particular. She took this opportunity to formally seek the teachers' consent and by proxy, the consent of their learners to participate in the study. She was then provided with individual teaching timetables for these teachers for whom the researcher used to prepare a lesson-observation schedule. She spent one month at this school. However, owing to a number of factors -- numerous Botswana public holidays, the mid-term school holiday during that period, and the mid-year examinations scheduled around the same period -- it was not possible to visit another school. Hence a visit to the next school was postponed until the beginning of the next school term. This provided the researcher with the opportunity to review the data already collected and to determine how best to proceed with the research at the other schools. She used the time to revise the two sets of questionnaires in readiness for the next visit.

The next visit was made at the beginning of September 2006 when the schools reopened. Although the schools had been initially informed about the researcher's visit, nevertheless, another reminder was sent before departing for the schools (Leedy & Ormrod, 2005; Rea & Parker, 2005). This proved useful as she found that, on arrival, one of the schools had already prepared the information required for the classes. The researcher immediately selected the number of classes required, informed the affected teachers about the study, sought their consent and that of their learners, and the observation of lessons began. Once the questionnaires had been pre-tested and modified according to feedback obtained from the pre-test, the researcher handed these out to both the teachers and learners. She also handed out questionnaires to both the teachers and learners in the study at School Three, which was the first school visited during class observations.

The researcher also began collecting data at the third school. Owing to a slight delay in providing her with the necessary information on the classes, progress was slightly slower at this school than at the previous schools. Nonetheless, when it was made available, the observation of lessons commenced, followed by the administration of the questionnaire of both the teachers and learners whose classes had been observed. It was not possible to complete the data-collection process at this school during this visit due to imminent final-year examinations for the F 5 classes, and end-of-year examinations for the F 4 classes.

The researcher used the rest of the time to review the data collected through lesson observations and to select some lessons for transcription. Then manual coding of the collected questionnaires began. During the coding process, it was realised that the coding of the questionnaires, while it was a tedious and time-consuming exercise, nevertheless needed exceptionally careful attention to eliminate errors which, if not attended to, would result in giving wrong data from the information provided by the respondents. From this experience, it was possible to estimate the time to be spent on the remaining questionnaires yet to be collected from the remaining two schools. This enabled advance planning with the Department of Statistics at the University of Pretoria for the next stage of the research, which was the capturing of the manually-coded data on the computer in readiness for data analysis. Input from the Department of Statistics is discussed under section 3.9 on statistical aspects of this chapter. Owing

to the large volume of questionnaires involved (a twelve-page questionnaire for over 2 000 learners), the researcher postponed visiting the third school (where data collection was yet to be completed) and to the remaining fourth school (where data collection had not yet started) until after the coding process was complete. This task was only completed in April 2007.

The third and final visit to the two remaining schools was made at the beginning of the second school term in early May 2007. Again the formality of reminding the schools concerned about the impending visit was repeated in the form of a letter. Some time was spent completing work at the third school, and then the researcher proceeded to the fourth and final school to observe the lessons and manage the questionnaire. The administrative formalities, similar to those fulfilled at the other three schools, were also repeated at the fourth school before the actual data-collection exercise began. At this school, some unexpected problems arose that affected the smooth flow of the latter stage of the field research. While the first two weeks passed fairly smoothly, the last two were affected by the sudden suspension from classes of learners whose parents had not complied with the payment of school fees reintroduced by the government in all public secondary schools. This school, like other schools, was adversely affected by the sudden enforcement of the directive of the Ministry of Education. Some teachers continued with the teaching despite the low number of learners in the classes, but others cancelled their lessons until the attendance rate improved. The lesson-observation stage was not seriously affected by this sudden disruption of classes as most of the lessons had already been observed. However, the questionnaire administration stage was affected. As a result, the return rate for the learners' questionnaires was low at this school compared to the other three schools. The researcher also spent a longer time at this school than at the other three schools as the latter stage of the data-collection exercise was slowed down by the problem explained above.

A total of four and a half months were spent at the research sites, visited at intervals over a one-year period from June 2006 to July 2007.

3.5 SAMPLE SELECTION AND SAMPLING PROCEDURE

Sampling is very important in studies that involve human subjects (Murray Thomas, 2003; Leedy & Ormrod, 2005). Different sampling designs are appropriate for different situations. It is important to consider the nature of the population to be studied before selecting the appropriate sampling technique. There are two main types of sampling: probability sampling and non-probability sampling (Leedy & Ormrod, 2005; Murray Thomas, 2003; Punch, 2003; Rea & Parker, 2005). In the former, it is necessary to specify in advance that each segment of the population will be represented in the sample. The sample is chosen from the larger population through random selection or random sampling. This means that each member of the population has an equal chance of being selected, based on the assumption that the characteristics of the sample selected are almost similar to the characteristics of the total population (Smit, 1985: 178-183, in Strydom, 2002: 92; Leedy & Ormrod, 2005). In the latter, the sample cannot be predicted and there is no guarantee that each element of the population will be represented in the sample. To that effect some members of the population have little or no chance of being selected. In the present study, the researcher used the probability random sampling design. This form of sampling was preferred because it gave equal chances to each segment of the sample represented.

There are five kinds of probability sampling, namely simple random sampling, stratified random sampling, proportional stratified sampling, cluster sampling, and systematic sampling (Leedy & Ormrod, 2005). The stratified random sampling was used in the present study owing to the nature of the population that needed to be sampled -- it had almost equal sizes of strata. Leedy and Ormrod (2005: 202) define 'strata' in a study that involves human subjects as "... layers of distinctly different types of individuals". This sampling technique (stratified random sampling) is normally used for a stratified population, such as school grades, which was the case in this study. Because each layer consisted of distinctly different types of individuals, the sample was chosen equally from each layer in the overall population. The main advantage of this form of sampling is that it guarantees representation of each of the identified strata.



3.5.1 Selection of teachers

The selection of the teachers was determined by whether or not the classes they teach were selected. For instance, the teachers teaching English Language, Setswana, and Biology as compulsory subjects to the selected classes, were selected for participation in the study. These teachers were approached, briefed and requested to participate. Almost all the teachers selected agreed to cooperate. However, where a teacher (whose class had been selected for participation) was unwilling to participate in the study, another teacher of the same subject and teaching at the same level was randomly selected, and if agreed, was included in the study, and his or her lessons were observed instead. Some teachers only raised objections if they found that they were to be observed more than once. In such cases, another teacher would be approached for observation. This is the problem with random sampling: it is not possible to know all the characteristics of the sample in advance, except the main ones that had to be pre-determined before the selection of the sample was made. Others did not object to being observed more than once, as long as they were observed in different levels (F 4 or F 5).

Similarly, for selection of teachers of non-compulsory subjects, such as Literature in English, History, and Home Economics, the same selection technique was used where there were more than two teachers. However, since in some of the schools there were fewer teachers per subject (usually two), both were normally requested to participate in the study as random sampling was unnecessary. Only teachers who were Setswana speakers were included for participation in the study, because CS was likely to occur between English and Setswana. The study, therefore, focused on CS in the classroom mainly between English (as the LoLT) and Setswana (as the national language, and the only local language taught in the schools from primary- to secondary-school level). CS between English and the main local language spoken in the area (Ikalanga) was not considered as this language is not taught in schools and therefore is not within the scope of this study.

At least 20 teachers per school were expected to participate in the study (This was almost 30% of the teachers per school), based on an average total of 70 teachers per school (the Ministry of Education Establishment Register for Secondary Schools and

Colleges of Education, 2003-4), bringing a total of at least 80 teachers in the study. Looking at the entire population of the teachers in the four schools, 80 teachers constituted 28.5% of the total. The researcher considered this to be a sufficient sample, based on the views of Guilfoyle and Hill (2002, in Magogwe, 2005: 46) that the selection of interview participants has little to do with numbers as the sampling is not done to get enough people to participate, but to collect sufficient data. However, the number of teachers included in the study also slightly increased due to two reasons. First, classes of optional subjects were separate from classes of compulsory subjects, hence the need to select such classes and their teachers separately. Second, because the teachers of the selected optional subjects were relatively few in all four schools, all were included in the study wherever possible, as sampling was not necessary. Therefore, a total of 130 teachers were involved in the study.

3.5.2 Selection of subjects

For the selection of subjects to be included in the study, the researcher decided to use the same subjects that had initially been selected during the pilot stage. As probability random selection had been used in the pilot stage, the exercise was not repeated. The researcher focused on the same subjects in each school, as all four schools taught the same subjects. Five subjects were selected for study: two language-based ones -- English Language and Literature in English (English L and L) and Setswana; one content-based subject -- History; one science subject -- Biology; and one practical subject -- Home Economics. While Literature in English is regarded as a subject separate from English Language and is classified as an optional subject, the researcher decided to treat it in the same way as English Language. Both subjects fall under the English department in each school and, at times, a teacher of English Language may also teach Literature in English. Furthermore, teachers of English Language and Literature in English are expected to meet the same departmental objectives to ensure the optimal teaching of English in both language and literature lessons to ensure that learners are equipped with the four language domains of competence, namely speaking; listening; writing; and reading in English to prepare them for further education and / or for vocational purposes. Further, in Botswana, Literature in English refers to both African and English Literature hence the subject is known as such and not as English Literature as is usually the case in other countries. In this study,

Literature in English will be used. Therefore reference to both English Language and Literature in English will be abbreviated as English (L and L). Although the focus of this study was mainly on English, Setswana was also included for observation to see if the phenomenon of CS also featured during Setswana lessons and, if so, how and why it occurred. The other subjects in the study were included for the same reasons. Furthermore, the objective was to compare and contrast the language use in the lessons of language-based and non language-based subjects to establish in which subjects CS occurred. Ordinarily, one would not expect CS to take place during a lesson for a language subject like English or Setswana as their focus is on improvement of language proficiency among learners. However, an investigation was necessary to confirm this assumption.

3.5.3 Selection of classes

At each school, at least 12 classes were selected as follows: Initially, six classes in Form Four and six classes in Form Five (equivalent to the South African Grades Ten and Eleven respectively) were selected to bring the total number of classes to be involved in the study to 48 classes. However, the number of classes slightly increased in some schools owing to a number of reasons: First, only three compulsory subjects -- English Language, Setswana, and Biology -- could be observed within the context of classes for core subjects. For optional subjects -- History, Literature in English, and Home Economics -- it became necessary to randomly select the classes separately as the learners in the main classes were too few in each class to give a true picture of what was actually transpiring in the classes in which these subjects were taught. As optional classes are organized separately from classes of core subjects, learners in these classes are drawn from different classes (of core subjects), but usually on the same level of ability. Second, it was necessary to observe the lessons in these subjects to obtain an holistic picture and not only to rely on data obtained from the questionnaire interviews.

An identification system in the form of letters of the alphabet was devised at each level of classes (that is, F 4 and F 5). Each class was identified by the form of a letter, for example, F 4 A, 4 B, and 4 C, and Form 5 A, 5 B, 5 C, and so forth. Then the alphabets were written on pieces of paper that were put in a bowl. Because the same number of classes had to be chosen at each level, an equal number of pieces were

randomly picked, so the chosen classes were the ones which were included in the study. The selection procedure also had to take into account the levels of ability of the students in the classes. The reason was that at each school, classes had been pre-categorised into low ability, medium ability and upper ability as per the policy of the Ministry of Education. This form of categorization was based on the results of the learners' Junior Certificate Examination. Low ability means that the learners were judged to be academically weak; medium ability means that learners were moderate achievers academically; and upper ability means that learners were high achievers academically. From observation, how the learners performed in the examination of Science subjects also seemed to be the major determinant of their categorization as learners in the classes of upper ability did all the pure Science subjects. Those in the category of medium ability did two Science subjects; and those in the category of low ability did combined Science, which comprised some aspects chosen from each of the three Science subjects. The objective of this categorization was to ensure that learners of similar ability were taught together during Science lessons. Whether this approach is effective or not was not part of the scope of this study.

3.5.4 Selection of learners

Initially, the researcher had planned to have 1 680 learners in the study, based on an average class size of 35 students from a population of 7 092 (the Ministry of Education Report on Allocation of Form Four candidates, 2004). This figure is based on the school reports made available to the researcher (S 1: 1 616 learners in 2006; S 2: 2 400 learners in 2007; S 3: 1 442 learners in 2006; and S 4: 1 634 learners in 2007). This was 23% of the total student population of the four schools over two years. This selection was based on the guideline that if the population size were approximately 1 500, 20% should be sampled (Leedy & Ormrod, 2005: 207). However, it was found that the average class size totalled approximately 40 students in each school and, in some cases, the number per class exceeded 40. Hence a total of 2 763 learners were involved in the study. This constitutes nearly 40% of the total population surveyed. In the classes of optional subjects, numbers varied greatly, depending on the popularity of a given optional subject in a school. In the words of one of the teachers, "... schools are experiencing a paradigm shift due to a shift in emphasis from traditional subjects to practical and Science subjects". Some subjects that are regarded as traditional and as

offering low career and job prospects are experiencing low enrolment in favour of more practical and Science-based subjects that now seem to offer better career and vocational prospects. All the learners in the selected classes, regardless of whether or not they are speakers of Setswana, were included for participation in the study.

3.6 DATA-COLLECTION INSTRUMENTS

Appropriate devices were obtained to enable the researcher to collect the data via the chosen research methods, namely qualitative *and* quantitative research methods. For the qualitative research paradigm of the study, the main form of data collection was observing and audio-tape recording of lessons, supplemented by note-taking on what was physically taking place in the classroom but could not be captured on the audio-tape recorder. As a back-up to the electricity-powered audio-tape recorder, a battery-powered audio-tape was also obtained. This proved useful in schools where electric sockets were out of order. Initially, the researcher's physical presence in the classroom and the visible audio-tape recorder used to record the lessons created unease among some learners. However, as the lesson progressed, the learners relaxed and, according to the judgement of the researcher, the dynamics of the lessons proceeded to being normal. Some teachers also expressed discomfort at having their lessons being recorded, and initially, in the classes of those teachers, the researcher observed some uneasiness, but the teachers quickly relaxed and the lessons were conducted in a normal manner. The researcher is confident that her presence in the classrooms and the recording of the lessons had a minimal effect on the participants (both the teachers and learners). Therefore the recorded data were authentic. Consequently, its analysis and interpretation will provide a genuine picture of what transpired in the classes observed as far as CS during the lessons is concerned.

For the quantitative aspect of the study, the main instrument for data collection was the questionnaire interview. Data collection was done in two phases. The first stage involved mainly the observation and audio tape-recording of lessons in the classroom. The second stage involved the administration of the questionnaires to both the teachers and the learners. It was important to administer the questionnaires after lesson-observation had taken place so that the atmosphere in the classroom was not unduly influenced by the types of questions posed in the questionnaire. This was achieved as

both the teachers and learners did not have prior knowledge of the research topic (obtained from the questionnaire) so the quality and dynamics of the lessons were not influenced by the contents of the questionnaire.

In addition to the use of the primary sources of data as stated above, published and unpublished studies dealing with CS in general, and CS in educational settings in particular, as well as similar studies dealing with English language teaching, served as sources of secondary data, as did other documentation, such as government pamphlets, print media, the Internet, as well as any other data encountered during the research process that was relevant to the subject of the study.

3.6.1 The observation of lessons in the classroom

The observation of lessons in the classroom was appropriate for the qualitative part of this study as it allowed the researcher to study the phenomenon of CS in the classroom as it occurred. Owing to the absence of video recording, notes were taken down about the physical environment of the classroom to give a clear picture of what was actually taking place during the lessons. Although initially it was planned to video-record lessons, it was not possible to do so due to the limited research budget. Even though the visual scenario of the classrooms was not available and the researcher had to rely on her note-taking skills to record what was happening in the classroom during the observation of the lessons, the notes proved adequate. Unintentional as it was, the negative effect for which the use of a video recorder in a class situation is known, such as interruption and the artificial atmosphere that it may create, was eliminated. Instead, a portable, transcribing tape-recorder was mainly used to capture data from the lessons as accurately as possible.

Consequently, where necessary, the researcher made modifications as the data collection progressed. Such unexpected modifications resulted in more than six classes per stream, and therefore more than 12 classes in some schools. As a result, the researcher observed 171 lessons for compulsory subjects, and 26 lessons for optional subjects. In the end, a total of 197 lessons were observed and recorded. However, this was not a disadvantage as a larger sample gives a more realistic picture. Other researchers previously used large samples in a qualitative study (Bullock *et al.*, in

Brannen, 1992: 88). The audio-tapes of the recorded lessons are also available should any reader wish to listen to them.

The researcher sat at the back of the class to minimize visibility from the learners, which could perhaps detract from or even affect their behaviour in class. The teachers appeared to have no problem with her presence. She neither asked any questions nor made any comments during the lesson, as the researcher was a non-participant observer. Participation in the lesson was not necessary as the data required were naturally generated during the lesson by the participants (the teacher and learners). This aspect is what differs about data collection in a formal situation such as the classroom, as opposed to data collected from a social setting where participation of the researcher may be necessary in some cases, or even inevitable (Mandubu, 1999: 21). If there were any questions the researcher needed to ask the teacher or to comment on the lesson, she normally asked them after the lesson had ended, when she and the teacher could exchange views informally.

Twenty samples of the lessons have been transcribed. Owing to a lack of space, only five have been included as Addendum C of this study. The qualitative analysis of the transcribed lessons was done by using Hymes' SPEAKING model (Hymes, 1974) described below. This model was useful in identifying instances of CS; at which stage of the discourse it occurred; and why it occurred. The analysed data are presented in Chapter Seven of this study.

(a) Hymes' SPEAKING model

Hymes' mnemonic of SPEAKING, used here as a framework in the analysis of the language behaviour in the lessons observed, was developed to promote the analysis of discourse as a series of speech events and speech acts within a cultural context (Hymes, 1974: 54 - 60). Because of its flexible application in the analysis of different kinds of discourse, it was adopted for the analysis of the utterances made during the lessons. The analysis enabled the identification of CS as a speech act that occurs in a discourse that takes place in a teaching and learning environment. Depending on the nature of the discourse, the components of the SPEAKING model can be wholly or

partly applied. Therefore, only those speech components that are applicable in a particular discourse situation can be used.

In the present study, the SPEAKING model in its entirety will serve as a point of departure for Chapter Seven.

The SPEAKING model refers to the following features of the speech event:

S refers to *Setting* and *Scene*: *Setting* is the time and place of a speech act or the physical environment of the speech act. In the present study, the setting is the secondary school. *Scene* refers to the psychological setting of a scene in the form of the nature of the events, namely, is the event serious, formal or informal? In the present discourse, the scene is defined as formal and serious even though the level of its seriousness is at the discretion of the teacher who is the director of the events.

P refers to *Participants* and *audience*; that is, those taking part in the speech event as either speakers or listeners. In the present scenario, the teacher and the learners are the participants and audience, interchangeably assuming the role of speaker and listener.

E refers to *Ends*: These are purposes, goals and outcomes of the speech event (occasion). Here reference is to the reason(s) why the speech act is taking place. For instance, is it to entertain, teach or to honour someone? The purpose of the speech act in this case is to get the learners to participate in the development of the lesson and to ensure that they understand its content.

A refers to the *Act sequence*, the form and the order of the event, that is, how the speech act begins, develops and ends. This also includes what takes place and at which stage it takes place during the course of the speech act. In this case, the act sequence refers to the stage(s) at which CS is used during the lesson; that is, does it occur at the initial stage of the lesson, during the development stage, or at the final stage of the lesson; or does it occur throughout the lesson?

K refers to *Key*, the *clues* that establish the tone, manner, or spirit of the speech act. The tone of the speaker's voice gives an indication on whether the speech event

(occasion) is formal or informal. *Key* refers to the overall manner of the speech event. The way CS is used will give a cue as to whether it is used in a formal or an informal way.

I refers to *Instrumentalities* (for example, CS), which are forms and styles of the speech taking place. The nature of the occasion usually dictates the form and style to be used, and these can be formal or informal. *Formal registers* may be chosen if the occasion is formal; and they may involve the use of well-chosen grammatical ‘standard’ forms. *Informal registers* may be used if the occasion is semi-formal or informal; they may involve the casual use of dialectical features. The registers may also include the use of technical terms depending on the nature of the subject. In the present study, the analysis will prove whether CS is used in the classroom in a formal or an informal way, and which purpose it serves.

N refers to *Norms*. These are social rules that govern the event and the participants’ actions and reactions. They refer to school or classroom discourse that is also culturally appropriate. The *norms* refer to behaviour that is socially acceptable in a given context. The *nature* of the occasion dictates the type of *norms* that are expected. If the occasion is formal, formal norms are expected; and if the occasion is informal, then casual norms may be acceptable. For instance, in the former, the speaker(s) and the listener(s) may be expected to conduct themselves in a formal way. These may involve a formal presentation of the speech act by the speaker(s), and the formal and orderly response from the listener(s). In the latter, it may be permissible for both the speaker(s) and the listener(s) to act informally, such as by making jokes, and even interrupting one another or the teacher. Since the study involves the investigation of the role of CS in education, the analysis will seek to establish the type of norms that govern how CS is used by both the teachers and learners. During the lessons, both formal and informal norms appeared to govern the use of CS.

G refers to *Genre*; the *form of speech* that is being used. The *genre* is determined by the *nature* of the speech act, that is, whether it is in *oral* or *textual* form. A genre could be in the form of one of the following: a lecture, a sermon, a business letter or a written speech. In the present study, as the speech act is a lesson taking place in a learning situation, it is regarded as largely formal. The speech acts could be greetings at the

beginning of the lesson, followed by explanations and questions at the development stage of the lesson, and a summary at the closing of the lesson.

3.6.2 Questionnaire interview

Two sets of questionnaires were designed - one for the teachers and another for the learners (cf. Addenda D and E) for the purpose of collecting the data in the form of responses to the questions in the questionnaires. The responses were the respondents' views on the problem under investigation. As mentioned earlier in section 3.2, para. 5, the two questionnaires were largely structured since they comprised mainly the close-ended questions. In addition, there were a few questions in each that were open-ended (13 in the teachers' questionnaire and 11 in the learners' questionnaire). These respectively constitute 6%, and 5% of the questions in the teachers' and the learners' questionnaire.

The questionnaires were detailed. They contained 205 entries and 232 entries for the teachers' and the learners' questionnaires respectively. They were tailored to be group-specific in some areas to solicit information specific to the category of the participants. Both questionnaires carried the following sub-headings:

1. The demographic details of the respondent;
2. the respondent's language profile;
3. self-evaluation in language use;
4. the views on the role of language in teaching and learning;
5. CS in the classroom (between English and Setswana); and
6. the use of other local languages in the classroom.

In addition, the teachers' questionnaire contained:

1. the teaching profile that included the teacher's highest qualification, teaching experience, form (grade) taught, number of learners per class taught, subject(s) taught; and

2. the evaluation of learners' language use in class.

The learners' questionnaire contained an evaluation of the teachers' language use in class as another sub-heading.

The objective of the long questionnaire was to obtain as much information as possible that would be relevant to the research questions in lieu of a direct interview with the respondents. This was especially important for the learners as the questionnaire interviews gave them an opportunity to respond to it without answering direct questions posed by someone with whom they were not familiar (the researcher). Because they were assured of anonymity, most of the learners appeared comfortable as they completed the questionnaire in class. The researcher had also noted during lesson observations that most of the learners were not confident enough to speak in English in class. Therefore, when the questionnaires were being finalized, it was decided to include all the issues that arose from lesson observations to better inform the study. Therefore, additional questions were included in the questionnaires to eliminate the need for a direct interview with both the teachers and the learners. However, the confidence to speak English during a direct interview was not problematic for the teachers.

A lack of additional funds to cover expenses that were to be incurred during another field-research visit also necessitated the decision not to conduct an oral interview with any group of participants. While being mindful of some of the short-comings of a questionnaire interview that involved completion by the respondents instead of a face-to-face interview, the researcher, is nonetheless confident that the data gathered by observing the lessons, complemented by the data collected via the questionnaires, will provide a reliable picture of the language situation at the schools covered in the study, and will sufficiently answer the main research question as well as its sub-problems.

(a) Administration of the teachers' questionnaire

The questionnaire was distributed to all the teachers in the study, with the request that it be completed and returned to the researcher before the end of the field research at each school. The teachers were to respond to the questionnaire in their spare time and

at a place of their own choice without undue pressure from the presence of the researcher. Unlike the case of the learners, the researcher was confident that the teachers would not encounter any problems associated with the language used in the questionnaire.

The administration of the teachers' questionnaire in all four schools took place without any problem, and the majority of the teachers returned it to the researcher before her departure from their schools. The overall return rate was good (72%). This includes School Four, where there were some problems of class disruption while the research was in progress.

(b) Administration of the learners' questionnaire

The researcher personally administered the learners' questionnaire. This minimized the problems associated with questionnaire interviews.

Initially, the researcher had planned to use the learners' preparation time (study time) for the purpose of the questionnaire instead of normal class time, to minimize class disruption, but it was not possible as all four schools had already scheduled their standard class tests for various subjects to be written during preparation times. At one of the schools, the situation was further complicated by the newly introduced, double-shift system. The researcher was informed that some learners never turned up for preparation time, which was now scheduled for mid-day, after the end of the morning shift at school. Furthermore, preparation time had been arranged for the F 5 classes only because they were completing their studies at senior secondary school and were about to write their school-leaving examinations. No preparation time had been arranged for the F 4 classes. Instead, the researcher arranged a special time with the teachers involved in the study to allow her to meet the learners during one of their lessons, so that each learner in the study could respond to the questionnaire at the same time. This also allowed the researcher to explain the purpose of the research to the learners and to ask them if they were willing to participate in the study. She was able to clarify some questions that some learners had difficulty in understanding.

Therefore, ambiguity -- which often results in the misinterpretation of the items in the questionnaire (when learners complete the questionnaire in their own time, and which

could either lead to the provision of wrong information or the return of an incomplete questionnaire owing to a lack of understanding) – was minimized. As a result, not many entries were recorded as missing.

This approach positively influenced the return rate of the questionnaires. A total of 2 367 questionnaires were returned out of the 2 763 questionnaires that were handed out. The return rate was therefore 86%. Because the learners' questionnaire was completed by the majority of the learners during normal class time and under the supervision of the researcher, most of the learners provided their individual opinion without the influence of their friends. Furthermore, the learners gave the completion of the questionnaire the seriousness it deserved.

However, the problems associated with the questionnaire interview were not totally eliminated. For instance, in some cases where the researcher could not secure the normal class time to administer the questionnaire, it was distributed to the learners to complete in their own time and to be collected the next day. In such cases, not all the questionnaires were returned; there were more missing entries than in the questionnaires completed during class time; and some misinterpretations of questions were noted. This was more apparent at the school that was affected by the sudden disruption of classes owing to the suspension from classes of learners whose school fees had not been paid. The lesson observation stage was not seriously affected by this unexpected occurrence, but the questionnaire administration exercise was. It was not easy for the researcher to secure class time from some of the teachers concerned to administer the questionnaire because some teaching time had been lost when teachers had to cancel classes with a reduced number of learners present. As already mentioned, the teachers instead offered to distribute the questionnaire to their classes and then to collect them on the behalf of the researcher. As a result, the return rate for the learners' questionnaire at this school was affected (68%), while at the other three schools it was well over 80%. Nonetheless, the number of questionnaires returned, while being slightly lower than at the other three schools, was sufficient to give a reliable picture of the language scenario at this school.

Notwithstanding the few problems outlined above, the overall return rate was exceptionally high, and the quality of the responses was good. The researcher is

therefore confident that the data provided by the learners will present a reliable picture of the language situation generally and the problem under investigation (CS), in particular, at the schools in the study.

3.7 DIMENSIONS OF VARIATION OR VARIABLES

The data in the questionnaires were mainly categorized into independent and dependent variables. Independent variables are those variables that the researcher studies as a possible cause of something (Leedy & Ormrod; 2005) or those key factors that may influence how the respondents may perceive a particular issue. The dependent variables are those that depend on the independent variables for their interpretation in relation to the question at hand. Characterizing variables as either independent or dependent varies from one study to another and what it seeks to address. In the present study, the following independent variables were identified for analysing the data obtained through the teachers' questionnaire:

- gender;
- age;
- nature of dwelling (that is, is it a city, or town, or village?);
- district of origin;
- educational qualifications; teaching experience;
- home language;
- subject taught;
- the school setting (that is, urban or peri-urban); and
- self-evaluation in fluency in English as a language of teaching;
- Setswana as a national language and, to some extent,
- Ikalanga as the main local language of the area.

For the learners, the independent variables were:

- gender;
- grade;
- home language;
- nature of dwelling (that is, is it a city, town or village?);

- district of origin;
- citizenship;
- school setting (urban or peri-urban);
- fluency in English as a language of learning;
- Setswana as a national language and, to some extent,
- Ikalanga as the main local language of the area.

While it was desirable to have age as an independent variable in the analysis of the learners' responses, this was not necessary as the age of the learners was largely homogeneous. Approximately 91% of the learners were aged between 17 and 19; close to 7% were aged between 14 and 16, while only 2% were aged between 20 and 24.

Only the independent variables directly related to the research questions were used in further analyzing the dependent variables (also directly related to the main research question) from the teachers' and the learners' questionnaires respectively. The details of such variables are provided in the next chapter.

The choice of the independent variables identified above was found to be in order, as similar studies that had also focused on the participants' attitudes towards a language(s), identified similar independent variables. Such studies were Baker's study on attitudes to the Welsh language (Baker, 1989, in Strydom, 2002, and Strydom's study on a sociolinguistic profile of Mamelodi and Atteridgeville (Strydom, 2002). The present study also seeks to identify and explain a language phenomenon, namely CS in the classroom. According to Baker (1989: 41, in Strydom, 2002: 94) independent variables can be regarded as determinants of language. However, he asserts that, "*No model, or even lists of factors that may make up attitudes to a language has appeared to have been drawn up*".

Consequently, Baker compiled a list from previous studies on the attitudes towards Welsh of what he referred to as possible ingredients that could serve as an overall model that seeks to predict positive or negative attitudes towards a language. Because CS is a language phenomenon, the researcher sought the use of Baker (1989)'s approach in determining the independent variables for the present study. How each

independent variable influences the dependent variables, will be discussed later in Chapters Five and Six when the quantitative analysis of the teachers and the learners' responses is done.

The corresponding dependent variables for both the teachers and learners were as follows:

- the respondents' views and attitudes towards CS and the extent of its use in the classroom;
- the didactic consequences of CS in the classroom;
- the educational effects of CS in the classroom, including its effects on the non- Setswana speaking learners;
- the effects of CS on the pace of teaching and learning;
- its effects on the LiEP of Botswana;
- the respondents' views on the revision of the LiEP; and
- the effects of the current LiEP on the respondents' perceptions about the use of Setswana, and other local languages for teaching and learning.

Broadly speaking, the dependent variables were summaries of the research questions. The choice of the dependent variables listed above was based on the main problem that the study sought to address as already stated in the preceding paragraph. The investigation of CS in education cannot be divorced from the use of English and Setswana. Therefore the participants' views and attitudes on the use of these languages, in addition to CS, were solicited. Each of these languages performs certain specific functions for their speakers. Ammon (1989: 15-16, in Strydom, 2002: 97) states that, "[...] each language fills a number of social functions [...] the function of a language is what it is used for – not its potential, but its use".

According to Strydom (2002: 97-88), language domains vary from activity to activity, and therefore some language functions are more important than others. For instance, in Botswana, the degree to which a language of instruction such as English, is used at school varies from the use of the same language in an activity like worshipping or shopping or visiting government offices. Conversely, the degree to which Setswana is used at school is not the same as its use at the shops or when visiting government

offices. To some extent, the same can be said about Ikalanga as the local language of the area. Consequently, the domains of language are dictated by the frequency of its use in a particular activity. For example, English fulfils a higher functional domain in education than Setswana and Ikalanga because of its status in the LiEP of Botswana. While Setswana has a role to play in education, its role is limited in that officially it is only taught as a subject at school, but not used for the teaching and learning of other subjects. However, the occurrence of CS in the classroom is evidence that informally, the functional domain of Setswana in education is growing, even though it is still limited to spoken communication and never used in written communication except in the written work for Setswana as a subject.

3.8 PRE-TESTING OF INSTRUMENTS

Pre-testing of any instrument that one chooses to use for data collection is very important (Czaja & Blair, 2005; Davies, 2007; Leedy & Ormrod, 2005). By pre-testing, the suitability as well as the reliability and validity (especially the questionnaire interview) of the instrument can be established. To that effect, an arrangement was made to pre-test the instruments to be used for the collection of the qualitative and quantitative data before their actual use in the field. Using results from the pre-test, the research instruments were finalized in readiness for the main field research. Also, the experience gained from pre-testing assisted the researcher to better prepare for the main field research. The strengths and limitations of each instrument were noted and this information was used to improve the data-collection techniques.

The lesson-observation technique was pre-tested at a senior secondary school in Gaborone where lessons in three subjects, namely History, English Language and Literature in English were observed. Both single and double lessons were observed. This was necessary to determine which length of duration of a lesson was more suitable for data collection. This gave the researcher an opportunity to familiarize herself with the instrument (transcribing / audio tape-recording system) that she intended using to record the lessons, and to see whether it was suitable for that purpose. The lessons recorded were then transcribed. From the results of the pre-test, it was decided to observe only single lessons (40 minutes long) as it was found that

there was sufficient information from a single lesson, and that a double lesson (80 minutes long) was too long to transcribe.

From the pre-test, the researcher found the audio-tape recording device user-friendly: it was portable, easy to operate, and sensitive enough to pick the classroom discourse even though the researcher sat at the back of the class.

Before the two questionnaires were administered to the participants in the study, they were also pre-tested at two separate schools to ensure their reliability and validity. The teachers' questionnaire was given to a few teachers who were asked to complete it, and then to make comments on its length, language level (whether it was too difficult or too easy, as well as its clarity) and the appropriateness of its contents in relation to the topic of the study. The respondents found the questionnaire contents easy to understand and relevant to the topic under investigation. They also found its length to be not intimidating, given that it was a structured questionnaire. The learners' questionnaire was also pre-tested by administering it to a group of learners in one class at another school. After completing the questionnaire, the learners were asked if there was any item or items in the questionnaire that they found too personal and therefore uncomfortable to answer. They were also asked about the clarity of its language. The researcher further wanted to know how much time was needed to complete the questionnaire. The time-factor was especially critical for the learners' questionnaire, because it was necessary to know beforehand how much time would be required to complete the questionnaire. Hence the researcher needed to arrange with the teachers concerned some class time that would be used to administer the questionnaire to the learners, so that they could complete and return it to her within the time given. The comments received were also used to amend the questionnaires before formally administering them to the participants.

3.9 INPUT OF THE DEPARTMENT OF STATISTICS

During the questionnaire design stage, the researcher closely worked with the Department of Statistics of the University of Pretoria. This was important because the data received through the questionnaire would have to be captured and analyzed statistically for easier interpretation. The Department of Statistics assigned a

statistician who advised on sample size and other matters of a statistical nature. The services of the statistician were sought throughout the duration of the study as and when the need arose. In addition, the computer programmer within the Department of Statistics was the main contact person who acted as the research consultant. The computer programmer advised on questionnaire design from its draft to its final stage. This was to ensure that possible inherent problems such as ambiguity of the questions, double meanings, and over-loaded questions, personal or oversensitive information were eliminated; and that the items conformed to the statistical requirements. It was also ensured that the two questionnaires (one for the teachers; another for the learners) contained almost identical questions as the same phenomenon was being investigated from the teachers' and the learners' points of view. Advice was also rendered on how best to structure the questionnaire, including coding the responses by using the Likert Scale (Leedy & Ormrod, 2005). This was appropriate for this type of study that was investigating the participants' opinions and attitudes towards a phenomenon namely CS in the classroom. In some cases, a checklist (Leedy & Ormrod, 2005) was also used. Both techniques were suitable as they made it easier and quicker for the respondents to provide the responses. They also made it easier to evaluate and quantify the respondents' opinions and then interpret them statistically.

After the two questionnaires were piloted, the researcher manually coded the responses and the computer programmer examined the responses to ensure that all codes necessary for the interpretation were available. Where additional codes were required, such advice was rendered.

The Department of Statistics also assisted with the entry of the manually coded data from the completed questionnaire into the computer. This exercise was necessary in readiness for statistical analysis of the data by using the appropriate statistics package. Once data entry into the computer was complete, the data were proof-read and cleaned for errors to ensure that coding would be consistent with the responses provided before the analysis thereof could be done. This was also to ensure that the results generated from the data were not different from the information provided by the respondents. Once the researcher had cleaned the data, the analysis of the data commenced and the results were presented in tabular form. The details of the data analysis are provided in the next three chapters on the presentation of the quantitative data.



3.10 ETHICAL ASPECTS

Ethical issues are very important to observe because human subjects are involved (Davies, 2007; Hofstee, 2006; Leedy & Ormrod, 2005; Punch, 2003). Ethical issues fall into one of four main categories, namely:

1. protection from harm;
2. informed consent;
3. the right to privacy; and
4. honesty with professional colleagues.

(Leedy & Ormrod, 2005: 101).

In the present study, informed consent was central because the study involved human subjects, namely the teachers and learners in each school. Informed consent implies that participants in the research be informed about the nature of the research to be conducted and be given the choice to decide whether or not they are willing to participate in the study. Although it was desirable that participants remained part of the research until its completion, they were informed that, should anyone wish to withdraw from the study at any stage, they were at liberty to do so.

In any research, giving too little or too much information about the study to the participants can be problematic. The former borders on a violation of the principle of informed consent, whilst the latter may influence the behaviour of the participants during the study, hence may affect the results of the study. Leedy and Ormrod (2005: 101) suggest that:

“... a reasonable compromise is to give potential participants a general idea of what the study is about ... and to describe what specific activities their participation will involve...to give them sufficient information to make a reasonable, informed judgment about whether they wish to participate”.

Consequently, the researcher adhered to the principle of informed consent. While the focus of the study was generally stated, the participants were given sufficient information that enabled them to make a decision as to whether or not they wished to participate in the study. For instance, participants were told that the objective of the

study was to investigate ‘the role of language in the teaching and learning of different subject categories, namely language-based subjects, content-based subjects, and practical subjects’. A consent form was provided that contained a summary of the research; the nature of participation required from volunteers, such as the activities in which they would have to engage, the duration of the study, as well as a guarantee of confidentiality and anonymity. The consent form included the researcher’s full contact details and a pledge to make available the findings of the research to the participants once the study was complete. In the same form, the teachers were required to sign if they were willing to be participants in the study and, by extension, also gave consent on behalf of their classes to be included in the study. The four schools were assured that a summary of the results of the study would be made available to them after its completion. However, once the study is over, participants would be informed about the specific topic of the study.

To further adhere to the principle of informed consent, the researcher sought official approval from the Ministry of Education in Botswana to undertake the research in the schools stated. All documents associated with this process were made available to the schools. All participants in the study remained anonymous, and confidentiality was assured.

3.11 PROBLEMS ENCOUNTERED DURING THE FIELD-RESEARCH STAGE

A number of problems were encountered during the field-research stage that contributed towards the delay in completing the data collection process within the time frame initially planned. First, there was a delay in processing the application for a research budget by the Training Office of the University of Botswana. While the researcher had planned to start the field research in May 2006, it was not possible to do so until at the beginning of June 2006. Second, at the schools it was not always possible to follow the lesson observation schedule drawn up in advance, due to a number of factors. While almost all the teachers whose classes had been selected for observation raised no objection, there were a few instances when some were unwilling to be observed. In such instances, another class was randomly selected, the consent of the teacher was sought and, if agreeable, included in the study. Sometimes some classes in the study were unavailable for observation at the time agreed with the

teacher as he / she was absent from class due to illness, or was away on some official commitments, or because a test had been scheduled at that time. In such cases, the observation schedule had to be modified to accommodate such unexpected changes. In some cases, a teacher appeared in the observation schedule more than once, but as a result of teaching different classes. Most teachers had no objection, but whenever a teacher raised an objection, another class was again randomly selected to include a different teacher. The formalities of seeking his or her consent were followed before the lesson could be observed. Consequently, a longer period was often spent at a school than had been originally planned.

In some classes, electrical sockets were not working; therefore it was not possible to use the recording system. Instead, a battery-operated mini-cassette recorder was used. Because of its small size, permission from the teacher was sought to place the mini-cassette recorder on his or her table at the beginning of the lesson to capture the lesson as it was being delivered. This was supplemented with active note-taking, not only of what was physically taking place in the class, but also of the lesson presentation and discussions. The position of the mini cassette-recorder had no adverse effect on either the delivery of the lesson by the teacher or the participation of the learners in the lesson. Some school events, and numerous public holidays, also affected the smooth flow of the data-collection process.

Finally, the research funds were exhausted before the field research was completed. Therefore, another break from the field research was unavoidable. An application for supplementary research funds was made to the sponsors. These were, fortunately, made available, and although limited, enabled the researcher to complete the data-collection stage.

3.12 CONCLUSION

This chapter discussed the study design and the methods that were used to collect the data, both quantitative and qualitative. The quantitative method involved the use of the questionnaires to collect the data from the teachers and learners. How each questionnaire was administered or managed, was also explained.

The qualitative method involved lesson observations to determine if CS were used in the classroom, and by whom. The research site was described, as well as the sample size and the sampling procedures. Hymes' SPEAKING model was also described because of its relevance to the analysis of the qualitative data. Concerning the data in the questionnaires, both the independent and the dependent variables were described. Pre-testing of the data collection instruments was also explained.

The role of the Department of Statistics at the University of Pretoria in the design of the research instrument, namely the questionnaire, as well as analysing the data quantitatively, was briefly explained. Ethical aspects observed during the field research were also described. Finally, unforeseen problems experienced during the data-collection stage were also articulated in this chapter.

The next chapter discusses the quantitative analysis method that was used in the analysis of the quantitative data presented in Chapters 4, 5 and 6. The demographic and language profiles of both the teachers and learners are presented in the next chapter.