CHAPTER 3

THE DEVELOPMENT AND EVALUATION OF THE BEGINNING COMMUNICATION INTERVENTION PROTOCOL (BCIP)

3.1 INTRODUCTION

In Chapter 2 transdisciplinary training was described as an approach essential to providing communication training to CSDs and their primary caregivers at a PHC level. In this chapter the emphasis will fall on the principles that are required to develop an effective programme that can be used by community health nurses to meet the needs of CSD and their primary caregivers at a PHC level.

In order to ensure that the training of primary caregivers of CSD's by community health nurses is accountable and sustainable, a baseline measurement of what works, how well it works for whom it works and at which level of economic efficiency it works, is necessary (Granlund & Blackstone, 1999). Bricker (1997) argues that in order to achieve this, outcome measurements should be linked to the continuous evaluation of the programme that is used. In order to effectively evaluate a programme, Mitchell (1991) states that outcome evaluation and process evaluation as well as the relationships between the programme inputs, goals, design and evaluation, should be included. The advantages of using this Mitchell's Evaluation Model (Mitchell, 1991) to evaluate the proposed training programme are twofold. Firstly, it gives trainers the impetus to think clearly about the aims of the training programme facilitating an understanding of the assumptions and principles upon which it is based. Secondly, the programme evaluation becomes a process, which provides regular feedback, enabling an improvement of the programme for the target population.

3.2 DISCUSSION OF MITCHELL'S EVALUATION MODEL

As mentioned in the introduction, Mitchell's Evaluation Model is used for the purpose of this study due to its specific advantages and the value it will add when verifying the proposed training programme. The elements of this model are presented in Figure 3.1.
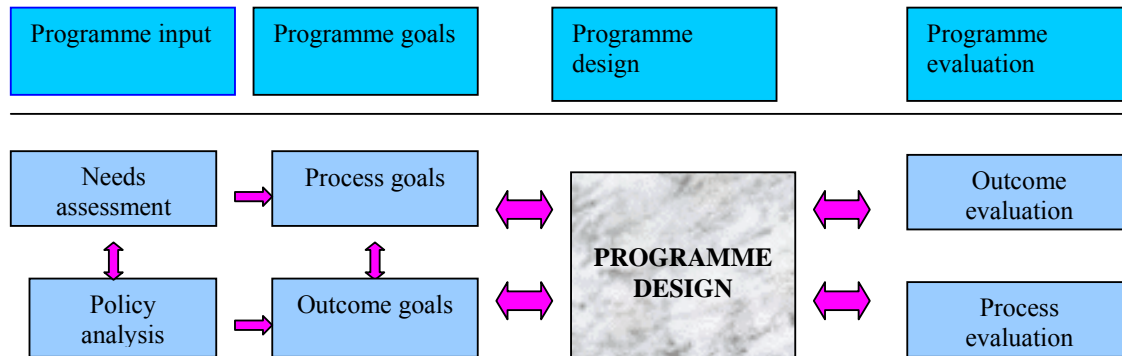

Figure 3.1   Mitchell's Evaluation Model (1991)

3.2.1 Programme input

The programme input consists of two elements, namely the needs assessment and the policy analysis.

One component of PHC (as discussed in Chapter 2) is the development of human resources, as equipping individuals with the necessary knowledge to care for themselves is seen as a major step towards improved health (Government Gazette 17910, 1997). This led to the development of the proposed training programme aimed at equipping community health nurses who work in rural PHC clinics with the knowledge and skills to guide primary caregivers of CSDs in the communication training of their children in an attempt to increase participation and independence. Although the primary focus (with subsequent outcomes) of the training programme is on the knowledge and skills of community health nurses, a number of secondary outcomes are also expected. This relates to factors that are not directly trained and include an increased understanding of

their role in training primary caregivers and their CSD's (training the trainer), greater autonomy in assisting this population, more knowledgeable referrals to other professionals, e.g. speech therapy, social services, etc., increased motivation to work with CSDs and more attempts to raise community awareness in terms of disability issues. Although not the scope of this study, it is expected that it will lead to an increase in the child's health and well-being (as the importance of regular intervention and compliance with medical appointments are highlighted) as well as better emotional adjustments of the primary caregivers and other family members (Eayrs & Jones, 1992).

The above discussion highlights two important principles, the first being comprehensiveness, which was discussed in detail in Chapter 2. Due to the diverse needs of CSDs and their primary caregivers, the importance of role transition, training the trainer and collaboration of community health nurses, which is achieved through multiskilling, is advocated in this research. The second important principle is that the training programme should be criterion-referenced, rather than norm-referenced, as it will allow the measurement of community nurses' knowledge and skills against their own baseline (Bricker, 1997; Eayrs & Jones, 1992).

Apart from the input derived from the needs assessment, all programmes are subjected to other influences – some explicit, some more subtle, some originating in the broader community in which the programme operates, others in the theories and values of the professionals involved, making a policy analysis necessary (Mitchell, 1991). Three main sources that will impact on the present study have been identified.

Firstly, legal requirements should be considered and then that the proposed training programme is in line with the South African Qualification Authorities (SAQA) Act (South Africa, 1995) as it is based on essential outcomes and competencies (skills). Essential outcomes, such as those required by community health nurses when training primary caregivers and their CSDs, should be cross-curricular (as described in multiskilling), and broad (e.g. problem-solving as achieved by using a problem-based format) (Geyer, 1997). The focus of the training programme should thus be on skills and

how knowledge can be used and applied in their own work context. Although not the focus of this research, this training programme will also facilitate the realisation of a number of acts in the South African Constitution (South Africa, 1996a) and the South African Bill of Rights (South Africa, 1996b) which state that all children should have access to intervention and medical care, granting them the opportunity to achieve their full potential. In the longer term the timely provision of communication training could also make inclusive education which is the aim of the South African School's Act (South Africa, 1996c) a reality for many children.

Secondly, consumer demands should be considered. Focus group discussions and questionnaire responses indicated that community health nurses request training regarding CSDs and their primary caregivers (discussed in Chapter 4). However, in the development of the proposed training programme the end consumers (namely the primary caregivers of CSDs) were also consulted, which is in line with the motto of the Disabled Children's Action Group (DICAG): "*Nothing about us, without us.*"

Thirdly, different philosophies regarding intervention to CSDs and their primary caregivers prevail, due to the fact that participants trained at different colleges and/or universities. Some have not had an orientation towards parent-focussed intervention and/or viewing CSDs as part of the larger community. In addition, all the nurses involved have their own attitudes towards disability based on personal beliefs and guided by underlying values (Heimlich & Norland, 1994). This is a particularly important aspect in the multi-cultural, multi-lingual South Africa. Differences are therefore expected in how community nurses view intervention with this population (e.g. the belief that CSDs should be loved and cared for without any formal instruction, is still prevalent). These factors are considered in the design of the proposed training programme. Focus groups were held with community health nurses to determine what their experiences in working with CSDs are and their attitudes regarding disability. In order to address this, the training programme also commences with a short introduction regarding the way to define CSDs and what the role of community health nurses are in providing training to this population.

3.2.2 Programme goals

The second section of Mitchell's Evaluation Model (Mitchell, 1991) provides a description of the programme goals, comprising two elements, namely process and outcome goals which interact with each other and exist in close synergy.

Process goals relate to the process to be followed in order to achieve the outcome goals and reflects the values, beliefs and theories that characterise a programme (Mitchell, 1991). The six main process goals defined by Mitchell (1991), and applied to the proposed training programme, are displayed in Table 3.1

Table 3.1:   Application of process goals to the proposed communication training programme

Process goals	Application to communication training
Enhanced community coherence	Primary caregivers, CSDs and the community at large are viewed as the community health nurse's "*partners*", which is in line with the PHC approach advocated by the proposed training programme. Community health nurses also receive information about "*social inclusion*" and are asked to discuss it during health talks focussed on disability issues.
Cultural sensitivity	The proposed training programme was developed locally; it is not a translation of a Western test. Focus groups and discussions with experts in the field and from the community ensured this.
Right to services	Community health nurses are the frontline workers in ensuring that all South Africans, in particular CSDs and their primary caregivers receive training so that they can reach their full developmental potential. As PHC clinics are relatively easy accessible to individuals who live in rural areas, this might also lead to earlier provision of training to this population.
Family integrity	The training programme is based on the assumption that the training of CSDs could be provided by their primary caregivers, provided they receive instruction and training. The training programme will aim at equipping community health nurses with the knowledge and skills to train primary caregivers in the provision of communication training to their CSDs in order to increase participation and independence. Primary caregivers will thus be strengthened and empowered by respecting their integrity, by enhancing their competence (through the provision of knowledge and skills in dealing with CSDs) by assisting them to access appropriate resources and by recognising their uniqueness.
Professional standards	The training programme focuses on the multiskilling of community health nurses in order to equip them with the necessary skills to function as true transdisciplinary professionals. By doing so they will be able to comply with all the roles and tasks set for them as described in Figure 2.3.
Accountability	Efficacy can be viewed as the measurement required in order to provide accountable services.

In designing outcome goals, short- and long-term goals should be considered, criteria for evaluating success, as well as timelines that can be used to determine the progress towards achieving the outcome goals (Mitchell, 1991). For the purpose of this study the short-term goals were to determine what knowledge and skills community health nurses could acquire with the specific training programme (the BCIP) within a period of one week with three in situ follow-up visits. The long-term goal was to see which knowledge and skills could be retained over a 5-month period. A positive long-term result would be a favourable indication that this type of training should be provided to all community heath nurses as a part of their basic training curriculum.

Sevcik, Romski & Adamson (1999) raised the question of how to measure the specific changes following communication (AAC) training, given the fact that change is multi-dimensional. Should measures be general, e.g. increasing quality of life, or should they be specific, e.g. increased use of manual signs to request "*help*"? In addition, the expected change should be based on the criteria specified for the individual. It will not be possible to measure unanticipated effects in a pre-planned manner, therefore a clearly defined conceptual basis in relation to what would be considered as a "*positive outcome in intervention*" is needed (Granlund & Olsson, 1999). Functionality of the desired change, the interrelationships between the change observed and the goal of the intervention provided, as well as the development and stability of more mature interaction patterns can be used as guidelines. However, it will also be important to document and discuss the unanticipated effects of intervention at all levels (Granlund & Olsson, 1999).

In order to clear up some of the confusion in this regard, five domains of AAC outcome measurement have been proposed (Blackstone, 1995b; Granlund & Blackstone 1999). These domains and their implications for the proposed study are presented in Table 3.2.

Table 3.2   Application of outcome goals to the proposed communication training programme

Outcome goals	Description	Implications for proposed communication training programme
1. Clinical status	Teaching strategies and approaches	See section 3.2.3 where the principles on which a communication training programme should be based (e.g. the importance of milieu teaching) are described.
2. Functional status	Increasing functional communication skills and user satisfaction	Should aim at increasing participation and independence and should address the issue of expanding the range of communication partners.
3. Quality of life	• Social impact • Educational / vocational impact • Increased communication opportunities	Increased opportunities for communication (e.g. through increased partners and the deliberate creation of communication opportunities). Earlier detection and identification of CSDs might enhance school referral. Nurses should be trained to value the opinions of the primary caregivers.
4. Consumer satisfaction	Meeting of needs	The satisfaction of the community health nurses, the primary caregivers and CSDs and the community at large will impact on the level of participation. The CSDs and their primary caregivers should be more involved in rating output, as this will help with the planning of training, placing emphasis on functionality and not on test scores (Hesketh & Hopcutt, 1997). In addition, nurses should be asked to evaluate themselves regarding their knowledge, skills and attitudes towards CSDs, pre- and post-withdrawal to determine if significant changes occurred over time.
5. Cost implications	Appropriate technology	The programme should include both aided and unaided communication means. The means selected should be easily obtainable (e.g. real objects and photographs) and should be easy to reproduce (e.g. PCS). A low cost digital speaker could also be included.

In conclusion, it is crucial to note that interrelationships among these domains exist, and when outcomes are measured, attempts should be made to include measurements across all five the different domains. The perspective of the person determining the outcome (e.g. whether they are a user, therapist, or primary caregiver) should be clarified as the outcomes of a programme is largely determined by the factors considered, which depends on the perspective of the person determining the outcome (Provence, 1985).

One way of evaluating the effectiveness of a programme is by determining its impact on the three levels of the ICIDH-2 (WHO, 1999). Firstly, the impact on the body function and structure (indicating a focus on the traditional rehabilitation) could be determined. This is similar to tertiary prevention, which is not the focus of the research, and which will therefore not be discussed any further. Secondly, the impact on the activity level could be determined, indicating a focus on the use of functional communication skills. Thirdly, the impact on the participation level where the focus is on expanding communication opportunities, could be determined. The latter two levels refer to training at the secondary level of prevention, which is the focus of this research. Blackstone (1995b) applied the ICIDH model (WHO, 1980) to AAC in order to measure individual outcomes. This was adapted to provide information regarding the impact of the proposed communication training programme on the ICIDH-2 (WHO, 1999). The focus of the training, the skills addressed in the communication training programme and desired outcomes are displayed in Table 3.3.

Table 3.3: **Application of the ICIDH-2 to the proposed communication training programme**

Level	Training focus	Skills addressed	Desired outcomes
Body function and structure	Reduce deficits through traditional speech therapy, e.g. articulation drills, language training, oral, motor exercises	Not included in the proposed communication training programme	Not included in the proposed communication training programme.
Activity	Increase functional communication skills through the use of AAC strategies, devices and techniques in everyday contexts	Communication means (aided and unaided) Communication functions (informative and social) Communication partners (adults and peers)	Increased knowledge regarding these aspects as well as skills to demonstrate these skills to primary caregivers of CSDs by which training is facilitated.
Participation	Increase access, expand communication opportunities, educate significant others, change attitudes and expectations. Reduce access and/or opportunity barriers that restrict participation.	Using skills addressed at the activity level to facilitate interaction with others to increase participation and independence. Creation of deliberate creation of communication opportunities to increase interaction and participation.	Increased skills to demonstrate participation potential to primary caregivers of CSDs. In the longer term participation and independence of CSDs should be increased.

From the above table it can be seen that the desired outcomes and the types of measurements differ across the ICIDH-2 levels. The aim of the proposed training programme is to increase CSDs' participation and independence by the provision of communication means, functions, partners and opportunities. This will be done by training community health nurses to provide training to CSDs and their primary caregivers. In other words if the CSD's circle of friends increased due to more effective communication skills, a positive outcome is noted despite the fact that speech intelligibility might not have improved. If a desired outcome is therefore only focussed on the body function and structure level, it will be of limited use as the outcome will prove to be negative, despite the fact that the provision of AAC might make a significant impact on the CSD's quality of life (i.e. on the participation level).

Schlosser and Braun (1994) expanded on the issue of effectiveness by suggesting that the generalisation of behaviour change should also be included. Stimulus generalisation refers to the transfer of learned behaviours to stimulus conditions that differ from those in which instruction took place, implying that the focus should not only be on the aspects in which training took place (context), but should also investigate the untrained dimensions. In the present research this refers to the way nurses can apply their knowledge and skills to the new cases they meet in their workplace.

Another important factor to consider in determining outcome goals relates to the comparative effectiveness of at least two interventions on specific criteria. In order to determine this, different training programmes and approaches were studied. It should, however, be noted that irrespective of the programme selected, some children will benefit more than others (Ramey & Ramey, 1992) and that each child develops at his/her own pace (Blacklin & Crais, 1997). The most prominent intervention programmes and approaches (as well as one unpublished checklist) aimed at providing communication training for young CSDs will now be compared in Table 3.4.

Table 3.4   A comparison of the most important intervention programmes / checklists / approaches for CSDs

CRITERIA Name	*PACT: Partners in Augmentative Communication Training*	*START Integrated Program: Striving Towards Achieving Results Together*	*Small Steps / Macquarie Program*	*Portage Guide to Early Education*	*Hanen Program*	*AEPS Measurement for Birth to Three Years: Assessment, Evaluation and Programming System*	*ACSD Checklist: Augmentative Communication Skill Development Checklist*
Author(s) & date published	Culp & Carlisle, 1988	Goodman, Katz & Greene, 19XX	Pieterse & Treloar, 1989	Bluma, Shearer, Frohman & Hilliard, 1976	Manolson, 1985	Bricker, 1997	Cress, Havelka, Dietrich & Linke, 1998
Country	USA	South Africa	Australia	USA	USA	USA	USA
Format	Book	Manual / kit	Manual/Kit	Kit	Book / Manual	Manual	Unpublished checklist
Population intended for	• Severe expressive disorder • Receptive language ≥2 year level • Basic representational skills • Uses AAC system / device • Reliable means to indicate / transmit messages	Young CSD's (range of disabilities included)	For primary caregivers of young developmentally delayed (intellectually disabled) children to teach in the home environment. Initially programme was focussed at children with Down Syndrome, but now is broader.	Pre-school children	Language delayed and/or impaired children	Young CSDs and those who are at risk	Young children who rely on AAC
For use by	Professionals	Non-professionals	Non-professionals	Professionals	Non-professionals	Professionals	Professionals
Age intended for	Not age specific	1 – 3 years	0 – 5 years developmentally	0-1yrs ; 2–3yrs 3-4yrs ; 4-5yrs 5-6yrs	Pre-schoolers	1 month – 3 years *(developmentally)* 1 month – 6 years *(chronologically)*	1 – 3 years
AAC specific?	Yes	No	No	No	No	No	Yes
Areas covered	• Priority communication (partner & user, communication means and functions,	• Gross motor skills • Fine motor skills • Communication skills • Cognitive skills • ADL	• Communication skills (including pre-verbal and verbal children) • Gross motor skills • Fine motor skills	Infant stimulation 1) Socialisation 2) Language 3) Self-help 4) Cognitive 5) Motor	• Initiating interaction: child • Initiating interaction: adult by	• Fine motor skills • Gross motor skills • Adaptive ADL skills • Cognitive skills • Social / communication	Eleven groups of behaviours that tend to occur together in development (non-hierarchical). Includes • Cueing hierarchy

					creating communication opportunities	skills (including pre-linguistic skills) • Social skills	• Modality e.g. behaviour/natural gesture; symbol/ picture; speech and/or device
	discourse behaviour) • Communication assessment guidelines • Communication intervention guidelines • Psychological considerations		• Receptive language skills • Personal and social skills • Developmental Skills inventory (assessment checklists) *Also includes generic intervention principles*				
Advantage(s)	Includes very important aspects of training partners and is AAC specific.	Culturally appropriate for the South African context, e.g. songs provided in major languages. Logically structured and well organised with colour coding.	Good resource guide for primary caregivers. Provides suggested activities. Checklists can be used to monitor progress.	Used extensively in developed and developing countries for a number of years. Outcomes data available. Provides activity sheets that correlate with the checklist. Different activities are colour coded.	Guides primary caregivers to observe children by looking at what the child does, what the child says and what the child understands. Suggest some play activities and how they can be used interactively.	Measures functional skills. Can be used by CSDs. Comprehensive as it covers important skill areas, assessment, intervention and a progress evaluation.	Short checklist with 25 items. Includes cueing hierarchy and different communication means. Applicable to young AAC users. Works with assumption that no pre-requisites for communication are needed.
Disadvantage(s)	Child needs AAC system before PACT can be implemented. Not applicable to young CSDs.	Not applicable to all pre-schoolers and does not include AAC principles (e.g. multi-modality). Training is recommended before using the START for non-professionals. Affordability is problematic.	No specific reference to AAC. Includes aspects like learning to attend & respond, play, turn-taking, and imitation for pre-verbal children, without addressing multi-modality or more communicative functions.	No specific reference is made to AAC and therefore it does not include multi-modal communication issues.	Although it guides primary caregivers to look for the use of natural gestures, it does not teach manual signs or graphic symbols. No proposed adaptations for CSDs.	Need skilled person to utilise AEPS with understanding of general develop-mental patterns. Assessment takes at least one to two hours per individual. Complex, multi-level, multi-faceted program requiring extensive training.	Does not provide suggested intervention activities. Does not work in a hierarchical manner. Not applicable for use in PHC setting – need knowledge on AAC terminology to complete it.

From Table 3.3 it is clear that only the PACT and the Augmentative Communication Skills Development Checklist (ACSD Checklist) focused on AAC. The PACT, however, focuses on the training of communication partners and is only intended for use once the child already has an AAC system. On the other hand, the ACSD Checklist, which is still under further development, (personal communication XXXXXXXXXX) does not provide intervention guidelines and can only be used by professionals who are familiar with AAC terminology. Three of the programmes mentioned can be utilised by non-professionals, namely the START, Hanen and Small Steps programs. It is unfortunate that they do not provide guidelines for the use of AAC strategies, in spite of the fact that they were developed for CSDs. It should, however be noted that the Hanen program includes sensitising the communication partner to the interpretation of unaided communication strategies (mostly natural and/or idiosyncratic gestures). The partner then attempts to model the desired behaviour (speech) while initially acknowledging any communication attempts (verbal and non-verbal) in order to increase the communication. However, it does not provide guidelines for the expansion of manual signs or for the use of graphic symbols (e.g. PCS), as speech is the preferred communication means. The Portage Guide to Early Education is also a useful tool as it addresses areas of pertinence for CSDs. Furthermore it has been used extensively for the past 25 years in both developed and developing countries, and a number of publications pointing to the effectiveness of the Portage has seen the light (Ferguson, 1996; Hardy & Sturmey, 1994; O'Grady, 1996; Shearer & Shearer, 1972; Wolfendale, 1998). However, Hardy and Sturmey's (1994) study indicated that despite the effectiveness of the Portage, more research was needed in the area of parent training, Additionally, for the purposes of this research, it falls short in the area of training CSDs to use AAC systems and/or strategies. Likewise, the EAPS Measurements is a powerful intervention tool for use in the clinical setting as it is a comprehensive programme for young CSDs, that provides information pertaining to the assessment, intervention and evaluation phases. As with the PACT and ACSD Checklist though, it can only be used by professionals and similar to the Portage, START and Early Steps, it provides no specific guidelines in terms of AAC stimulation. This is despite the fact that all these programmes / approaches have a "*communication area*" with a section that highlights the pre-verbal or pre-linguistic child.

Although a number of programmes / approaches thus exist that can be utilised by professionals and non-professionals alike when stimulating young CSDs, a need exists for a programme that includes AAC intervention. A programme of this kind should focus on the different communication functions (both informational and social), and also include the teaching of multi-modal communication (including aided and unaided AAC strategies). Furthermore attention should be given to the structuring of the environment to provide deliberate opportunities for communication (the creation of so-called "*communication temptations*" or sabotage) as well as opportunities for increasing the number of communication partners (adults and peers alike) (Butterfield, 1995; Calculator, 1997).

3.2.3 Programme design

This aspect deals with the specific procedures and structures that must be established in order to achieve the output and programme goals. According to Mitchell (1991) five broad areas (namely social policies, administration and management, physical environment, curricula, teaching strategies and methods) should be included. Each of these aspects, and their relevance to the proposed training programme, will now be described.

Social policies are closely related to the aspects that were discussed under the process goals, e.g. cultural sensitivity, right to services, etc. The social policies are also embedded within the PHC approach that is the philosophy of the proposed training programme. The administration and management of the training programme is controlled by the researcher as it is part of a formal study. Once the effectiveness of the programme has been proven in equipping community health nurses with the knowledge and skills to provide training to this population, consideration must be given to the implementation of the programme within the context of national service delivery, e.g. Department of Health, the Department of Maternal and Child Studies, the Department of Welfare and Child studies, etc. The content of the proposed training programme is portable, and does not require special

physical environments and/or facilities. It is intended for use in rural and remote PHC clinics, irrespective of the size of the clinic or the facilities available (e.g. electricity).

When looking at the **curricula** of the proposed training programme, it is once again important to look at existing programmes as discussed in Table 3.3. The aim of the proposed training programme is to equip community health nurses with knowledge and skills about beginning communication skills enabling them to train primary caregivers of CSDs to train their children (training the trainer). In order to achieve this a specific training programme, namely the Beginning Communication Intervention Protocol (BCIP) was developed. The complete BCIP is provided in Appendix A and it is demonstrated in Appendix B. The five principles on which it is based, will now be discussed in more detail.

3.2.3.1   Principle 1   Use of the ICIDH-2 to define an individual's functioning

The relevance of using the ICIDH-2 to determine the individual's functioning and disability from the perspective of his/her life circumstances was discussed in Chapter 2. By using this definition, there is a move away from the "labelling" of individuals (closely related to the medical model) to rather look at the environmental and/or personal factors that may limit or facilitate the individual's participation and independence in society (social model). This model also highlights the underlying concept of social inclusion, as it alludes to factors that may impact at an activity level (e.g. the CSD cannot attend the local Sunday school due to attitudes that prevail) and/or at a participation level (due to LNFS the individual cannot make himself understood and therefore he has no friends). Disability is thus seen as a multi-dimensional phenomenon resulting from the impaired interaction between people and the environment. The training programme should also highlight the fact that the focus should not be on the **dis**ability, but rather on the **ability** and how that can be used optimally to ensure full and active participation in everyday activities.

3.2.3.2   Principle 2   Use of milieu teaching approaches

Milieu teaching is a naturalistic strategy for teaching functional communication skills within everyday occurring routines (Hart & Risley, 1975; Kaiser, Yoder & Keetz, 1992). It includes specific teaching techniques, e.g. time delay, incidental teaching and the mand model. All these techniques share common characteristics and have been used singly or in combination. This includes that the child's lead or interest is followed and expanded, that multiple, naturally occurring examples are used to teach simple communication skills (e.g. deliberately providing opportunities for interaction during ADL), and that the child's response is prompted (e.g. provide the child with the aided or unaided communication means to meet his needs (Kaiser *et al.,* 1992). Milieu teaching approaches also provide logical stimuli (e.g. when requesting milk he/she receives milk) and naturally occurring, real consequences, meaning that the communication act affects the environment which, in turn responds in accordance with the intent of the communication (Rowland & Schweigert, 1993). Research has indicated that milieu teaching is appropriate when teaching CSDs to use aided and unaided communication strategies (Blischak, Loncke & Waller, 1997). Teaching in the natural context thus allows the primary caregiver to take advantage of cues and consequences that are natural parts of the setting (Light, 1997). All milieu teaching approaches requires that the facilitator (in this care the primary caregiver) is trained to identify potential communication contexts (in this case ADL) and that they use a number of specific techniques to deliberately create communication opportunities (Beukelman & Mirenda, 1998; Blischak *et al.*, 1997; Glennen, 1998a; Rowland & Schweigert, 1992).

3.2.3.3   Principle 3   Based on activities of daily living

The environment in which a CSD learns, lives and functions must provide opportunities for interaction. Typical routines and activities (such as ADL) within the environment offer repeated opportunities for a person to learn to anticipate events and to respond to needs or changes within these events (Johnson *et al*., 1996). Light and Kelford-Smith (1993) found that CSDs spend significantly more time in daily care routines (such as

eating, dressing and bathing) than their typically developing peers. In addition, these activities can take a long time to complete and often the day consists of little other than these fixed routines (von Tetzchner & Martinsen, 1992). Routines conducted within natural environments offer reasons for communication that cannot be recreated in simulated places. CSDs in rural areas (such as the Moretele Health District) often do not engage in typical play activities with adults. Adults are viewed as caregivers who should keep themselves busy with domestic duties and childrearing. Therefore, in order to maximise the opportunities for interaction within this context, ADL were selected to provide the context and content for instruction. In addition, primary caregivers were familiar with these tasks, and did not see them as treats or "*extra work*". Community health nurses assisted primary caregivers in the use of an existing routine (e.g. feeding) and the way to adapt it slightly in order to provide more opportunities for interaction.

3.2.3.4   Principle 4   Communication is defined in terms of four domains: functions, means content and partners

Communication is defined as any act by which one person gives information to, or receives it from another person about that person's needs, desires, perceptions, knowledge or emotions. This can be done via gestural, signed, spoken, and/or written means. Communication is generally considered to be intentional and involves social interaction. The whole process is embedded in a specific context and environment (Beukelman & Mirenda, 1998; Fuller & Lloyd, 1997; Glennen, 1998b; Johnson *et al.*, 1996).

From this definition four main areas arise, namely:

i.   Communication functions (***why*** the child communicates)
ii.   Communication means (***how*** the child and others communicate)
iii.   Communication content (***what*** the child and others communicate about – role of the environment)
iv.   Communication partners (who the child communicates with)

Figure 3.2   Four main areas of communication
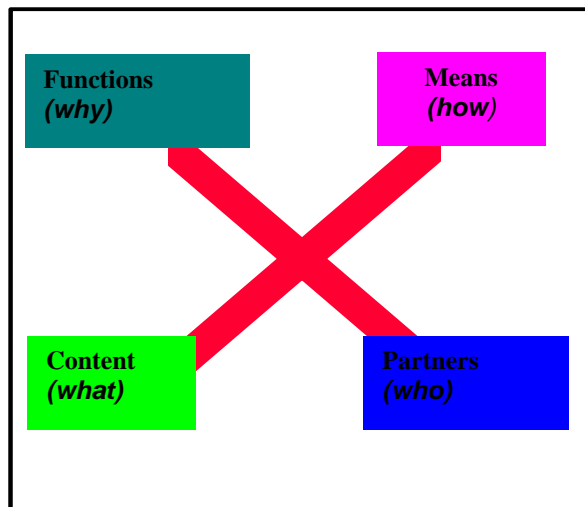
A number of beginning communication functions (including both informational and social functions) are included in the BCIP. It has been reported that it is important to teach a broad repertoire of communication functions, otherwise only the request function is used (Romski & Sevcik, 1988). Specific strategies (communication temptations) are then taught to facilitate each of these functions, e.g. in order to teach "*requesting help*" a desired item is placed out of reach. These activities are based on the Analysing the Communication Environment (ACE) checklist (Rowland & Schweigert, 1992).

In order to provide the child with a means way of communicating, the BCIP addresses a number of aided communication means (namely real objects, photographs and line-drawings that are displayed either on a communication board on the EasyTalk 4 Option digital speaker) as well as unaided communication means (manual signs from South African Sign Language {SASL}). The sequence of the aided communication means are based on the practice of some AAC clinicians that follows the approach that three-dimensional symbols are easier to identify than two-dimensional symbols (Kitty, 1993; Kitty, 1993). Although this sequence does seem to be the way in which some typically developing children acquire these skills, it is not true in all cases (Dixon, 1981). In Hochberg's (1962) study it was demonstrated that the ability to recognise line-drawings is not dependent on training, as individuals without any formal training of paired-

associates could recognise line-drawings. Gibson (1969) reported studies where typically developing children could identify cartoons at an earlier age than some line-drawings, with photographs and shaded drawings about equal to each other, somewhere between line-drawing and cartoons). It should, however be mentioned that in one of the studies that reported this finding (Ryan & Schwartz, 1956), the participants were adults who already knew the object's identity (in other words it would not refer to a person seeing the PCS for "*more*" for the first time), and the critical characteristics of the objects were three-dimensional (unlike the elements in the proposed training programme, e.g. sock, spoon, etc.). Dixon (1981) also alluded to the fact that CSDs do not only develop at a slower pace than typically developing children, but that differences also occur and therefore the assumptions in terms of the developmental levels of perceptual grading should be treated with caution. Apart from only looking at the representation of concepts (e.g. on object, graphic symbol level etc.) the complexity of the initial symbol acquisition process for CSD should also be considered as the meanings of some symbols appear to be broader (e.g. the symbol for MUG might be interpreted as "*drink", "thirsty", "milk"*, etc.) or more loosely integrated (Romski & Sevcik, 1989). In a study by Gerber and Kraat (1992) they also alluded to the difficulties of using a developmental model when planning communication training for CSDs. However, there seems to be a general agreement in the literature that CSDs may no longer be denied communication intervention simply because they are unable to demonstrate certain pre-requisites (e.g. object permanence) (Beukelman & Mirenda, 1998; Kangas & Lloyd, 1988; Romski & Sevcik, 1988). The BCIP therefore starts at an object level for CSDs who may still be functioning at this level, but also provides opportunities for expansion and more abstract messages (e.g. "*full*") by means of PCS. Regardless of the type of symbol used (e.g. object or graphic symbol), it has the advantage of being permanent, implying that it can be touched or manipulated, requiring only recognition out of an array of symbols, rather than recall from memory (Rowland & Schweigert, 2000). Additionally, it requires only simple motor movements (e.g. pointing or picking up of the symbol or even eye-gaze). This study also clearly indicated that the introduction of aided low technology means did not cause CSDs to abandon the speech that they were using nor did it prevent the acquisition of new spoken vocabulary, but rather assisted the CSDs in developing additional spoken

vocabulary and an overall increase in the level of communication (Rowland *&* Schweigert, 2000).

Photograph 1   The elements of the BCIP

The BCIP also includes some principles for facilitating interaction with both peers and adults (e.g. by having a party and inviting neighbourhood children) in order to facilitate social inclusion. One of the key characteristics of increasing participation and interaction is that people have close proximity and frequent opportunities to interact with each other (Falvey, Forest, Pearpoint & Rosenberg, 1994). In order to facilitate close proximity with potential communication partners CSDs should be included in their communities (e.g. attend local schools, church, etc.) as this will heighten the possibility of forming bonds that will result in friendships. Therefore a communication training programme should highlight the importance of social inclusion to increase the number of potential communication partners. Communication partners should be taught to recognise the CSDs' communication means (which are often subtle and ambiguous), how to

acknowledge these means and attach possible meaning to it (i.e. determining the communication function) and how to respond contingently (Zangari & Kangas, 1997). Rowland and Schweigert (2000) have demonstrated that CSDs who understand how to use pre-symbolic behaviour for intentional communication, will more readily learn how to use a symbolic system to communicate expressively.

3.2.3.5   Principle 5   Provision of deliberate communication opportunities is essential

It has been recorded that CSDs communicate at a low rate (Gerber & Kraat, 1992). This could be for a number of reasons, including few reasons to communicate and few opportunities for meaningful interaction as adults typically provide CSDs with fewer opportunities to communicate than is the case with their speaking peers (Zangari & Kangas, 1997). Some partners also have little or no expectations that CSDs can or will participate in interaction, with the main focus of interaction often being exclusively on caring and nurturing. Few demands are thus placed on them, leading to reduced communication opportunities and little motivation to develop more effective communication skills (Van Tatenhove, 1987).

The provision of deliberate communication opportunities is complex, as a delicate balance must be achieved between the elicitation and pre-emption of communication behaviour (Calculator, 1997; Rowland & Schweigert, 1993). Often, when a child is learning how to communicate by using a specific communication means (e.g. manual signs), it is appropriate for the adult (primary caregiver) to offer deliberate cues as this provides many opportunities to practise emerging communication skills (as discussed in the milieu teaching section). As the child's abilities improve, the deliberate overt cues should be reduced to allow the interaction to become child-controlled instead of remaining adult-controlled. As CSDs are often passive in communication and rarely initiate interaction, this aspect should be addressed (Calculator, 1997; Van Tatenhove, 1987).

As stated earlier, the strategies for providing deliberate communication opportunities was based on guidelines from the ACE checklist (Rowland & Schweigert, 1993b).

The final aspect of the programme design that should be included relates to the teaching strategies and methods that were used. Adult learners have a number of characteristics in common. They have a rich background of knowledge and experience and learn best when this experience is acknowledged, and when new information builds on their past knowledge and experience (Caffarella, 1994). As they are able to learn through the greater part of their lifespan, attention has to be paid to the method of learning, as well as to the content of what is learned (Jarvis & Gibson, 1997). Consequently a problem-based learning approach that includes the use of case studies and video presentations should be included (Savin-Baden, 1997). In addition, adult learners are more willing to engage in learning if the content is meaningful to them. They are also pragmatic in the learning which means that they want to apply their learning to present situations (Caffarella, 1994), which necessitated the inclusion of role-play activities. Adults also prefer to be actively involved in the learning process rather than being the passive recipients of knowledge, implying that the training should focus on interactive training that involves workshops where community nurses will have ample opportunities to practise skills hands-on, also video discussions and role play. Finally, adults are more receptive to learning in situations that are physically and psychologically comforting (Caffarella, 1994). Regarding the teaching of skills, a reflective approach is followed which implies that the participants are not merely expected to copy a demonstration (Jarvis & Gibson, 1997), but rather to consider the strategy most acceptable to themselves and to the case study, provided that the desired outcome is achieved (e.g. when teaching the function "*requesting more*", the trainer demonstrated bouncing a child on her lap and stopping. This was adapted by the participants to include pushing a child on a swing and stopping, tickling and stopping, swinging a child and stopping, etc.). When teaching skills to adults it has been suggested that a problem-based learning approach whereby participants actually discover the relevant principles for themselves is effective. Trainers should also focus on creating a supportive environment in which participants are given the

confidence to practise. This had an impact on the teaching style of the trainer as well as on the. venue that was selected (as discussed in Chapter 4).

3.2.4 Programme evaluation

This is the process by which a systematic evaluation is made to ascertain whether the programme has reached its goals and objectives. The discussion pertains to both the evaluation of the outcome and the process. For the purpose of this study, both qualitative and quantitative measures are used in the evaluation. The qualitative data provides information on the training process, as focus groups were held to determine what nurse's exposure to CSDs was and at the end of the five month training period, focus groups were again held to evaluate the training process. The quantitative data provides data on the outcomes (for primary and secondary outcomes). However, it should be noted that the training outcomes and the process are related and impact on each other, and thus a clear separation of these components is not possible.

3.3 CONCLUSION

Involvement in the BCIP will have benefits on many different levels, e.g. for the community health nurses, for the primary caregiver, the CSD and the community at large. In the present study, however, the focus is on community health nurses, as they are the primary beneficiaries of the training. It is expected, however, that the BCIP training will also have an impact on the secondary beneficiaries (who were not directly trained during training, but who receive training from the community health nurses).

Chapter 3 described the factors and principles that have to be considered when developing a communication training programmes for CSDs and their primary caregivers that can be provided at a PHC level by community health nurses. Mitchell's Evaluation Model (1991) was used as a basis for the discussion. Specific emphasis was placed on the measurement of outcomes in order to evaluate the proposed training programme (BCIP).