How teachers can manage attention span and activity level difficulties due to Foetal Alcohol Syndrome in the classroom: an occupational therapy approach

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ABSTRACT

Foetal Alcohol Syndrome (FAS) is a disorder that can occur in a child whose mother consumed excessive amounts of alcohol during pregnancy. Children with FAS experience physical, cognitive and/ or behavioural problems, with possible life long implications[1].

Principles of Evidence Based Practice (EBP) were used to identify methods that teachers could use to stimulate the development of learners with FAS in the classroom. The project took place at a school in Genadendal, South Africa where teachers experienced difficulties with learners who presented with developmental delay due to FAS.

Through observations, interviews and assessments of the learners, multiple problems were determined of which activity level and attention span problems were prioritised. A literature search was carried out to identify intervention strategies which could be applied in a classroom setting. Compensatory strategies were chosen and divided into adaptations of person, environment and occupation. Teachers were trained in these strategies through a workshop which was supplemented with a sourcebook.

Key words: Foetal Alcohol Syndrome, developmental delay, occupational therapy, compensatory strategies, teachers

Introduction

This project was carried out in the Theewaterskloof municipal area of which Genadendal forms a part. This is a rural area in the Western Cape which is characterised by poverty and unemployment. Many people work on farms for a minimal wage and weekends are often spent in heavy binge drinking, which historically arose from the practice of the dopsystem[2]. The Theewaterskloof municipality estimates the population of Genadendal to be 4500, made up primarily of pensioners and children[3]. Many parents move out of the village due to lack of work opportunities, usually in the direction of Cape Town, often returning on weekends. Other parents leave their house early in the morning, returning early in the evening. This means that children are often alone at home or are looked after by their grandparents.

Foetal Alcohol Syndrome (FAS) is a problem related to poor socio-economic conditions. The complex interrelationships of environmental stress, inadequate parenting, lack of enrichment and poor nutrition all contribute to poor development and developmental delays[4] in children with FAS.

The Theewaterskloof project which began in May 2004, was a collaboration between the Theewaterskloof Municipality (South Africa), the University of the Western Cape (South Africa) and the HAN, University of Arnhem and Nijmegen (the Netherlands) with the aim of creating a better society for all[5]. In working towards achieving this aim, students work on projects related to the Integrated Development Plan of the Theewaterskloof Municipality. This occupational therapy student project consisted of three parts. In part one, the situation and problems in the classroom were investigated and described, and a main problem was determined. In the second part a solution for the main problem was researched and proposed and in part three the solution was implemented through the training of teachers to stimulate learners with developmental delay related to FAS.

Foetal Alcohol Syndrome

FAS is a disorder that can occur in a child whose mother has consumed excessive amounts of alcohol during pregnancy. The effects can be physical, cognitive and behavioural, with possible life long implications[1]. The incidence of FAS in the Western Cape of South Africa is 50 per 1000 live births[6]. However it is believed that the rate in the wine region is 1 per 30 live births[1].

In the classroom these effects may be demonstrated as problems with memory, learning new information, initiation and termination of tasks, copying information from the blackboard, short attention span and poor concentration. Delayed development of motor skills is also present and can be reflected in difficulties with learning to write[1, 4, 6].

More than 20 years ago; there were hopes that FAS could be prevented through intervention by the public health community but this has proved a difficult task and the public health community is still struggling to eliminate problems which should be preventable. Besides research into the prevention of FAS, there is also scope for developmental work at community level more specifically with teachers, mothers, pre-school and foundation phase learners[7].

Background to the methods used

The teacher as the client of occupational therapy services

Occupational therapy provides specialised services that enhance the ability of individuals to perform and to achieve satisfaction in their daily occupations[8]. Occupational therapists who work with children, develop interventions from analysing a child's skills, activities and occupations, and the context of these occupations. When evaluating a child's performance, the therapist determines how limitations in performance relate to external factors in the environment, or to discrepancies between the child's abilities and activity demands. In a school setting the occupational therapist has the unique opportunity to help learners become as functional as possible in their own environments. School-based occupational therapy intervention focusses on the educational goals of the learner and can support both academic and functional goals[9]. To be successful in the school setting, occupational therapists must be able to analyse performance, solve problems and develop effective interventions in partnership with families, teachers and other professionals. In order to achieve this, it is important that the teacher becomes part of the process.

The Model of Human Occupation (MOHO) gives specific attention to different roles which a human can perform in his or her life[10]. In this project teachers of the foundation phase classes in the targeted schools were complaining about their role performance. They felt like a parent who has to raise the child, a role that they did not choose and felt that they wanted to be teachers again. However they did not feel entirely competent in the teacher's role as they were not able to stimulate learners with attention span and activity level difficulties adequately. In view of this, it was the teachers that were selected as clients and not the learners with FAS. This approach was chosen in order to ensure the sustainability of the project. If the focus had been on the learners with FAS, the project would not have been sustainable, due to the dearth of occupational therapy services in and around Genadendal.

The role of the occupational therapist at a school is therefore that of a consultant. In this role, assistance with problem solving and advice can be given to the institution or the individual. The process usually consists of five phases ie diagnosis, setting goals and developing strategies, executing strategies (e.g. giving a workshop), implementing advice (the institution or individual uses the strategies) and evaluating the process[11]. If this process is implemented in a school and the occupational therapist works on problems and goals identified by the teacher (the client), teachers can learn how to address the situation on their own.

Evidence Based Practice (EBP)

EBP is an integration of the occupational therapist's clinical expertise, the best available external clinical evidence, a client's wishes, demands and expectations and organisational possibilities, which are all taken into consideration when making intervention decisions[12]. Scientific results are analysed to see which intervention is most appropriate and most likely to work in a specific situation. The EBP approach is seen as 'client centred' care, whereby the best scientific solutions are linked to the occupational performance of the client[13]. The process of EBP entails different steps in order to gather the highest quality of evidence. To achieve this, the following must be done:

1. Existing guidelines and systematic reviews are consulted.
2. Scientific research articles are searched and their quality and relevance analysed.
3. Clinical expertise is utilised[14].

Increasingly, occupational therapists are being held accountable to agencies outside their profession to justify the receipt of their services[15]. Using the principles of EBP can help occupational therapists to choose interventions, assessments, theoretical and practical models. In this project the principles of EBP were used as much as possible to investigate the problems of learners and find the best approach and solutions for teachers.

Community Based Rehabilitation

Principles from community based rehabilitation (CBR)[16], e.g. working bottom-up, were used to develop a community project. This was important in order to make the project sustainable and to promote a positive attitude towards the project.

The PEO model

In the Person-Environment-Occupation (PEO) model, human occupation is constituted by means of three parts: performance context, performance area and performance component[17]. To get a clear understanding of problems in human occupation it is necessary to examine all three of them. By performing a needs assessment and analysing all the parts that may influence a problem, it is possible to get a clear picture of the factors influencing the problem[18].

Objective of the project

The objective of the project was to equip the foundation phase teachers of primary schools in Genadendal, with the skills to stimulate the development of learners in their classroom who have attention span and activity level difficulties due to FAS. As mentioned previously, this study was conducted in three parts.

Part one: problem investigation

Methods

Needs assessment

By using an EBP approach a literature review was performed to find the best way to determine the performance context, area and components. Literature shows that different methods can be useful to gather information. The observational method is a good method to gather information about behaviour. Interviews are an excellent way to gather information about knowledge, attitude, and motivations of beliefs [19]. Therefore, a combination of interviews and observations was chosen to determine the performance context and area of teachers and learners.

To understand what causes the teachers' difficulties, it was also necessary to assess the performance components of the learners. Once the problems of the learners were defined at performance component level, it was possible to determine which components should be stimulated. With this information it was possible to determine what knowledge could be useful to the teachers, so that they would be able to stimulate learners with a developmental delay more effectively.

To examine the performance components it was important to choose reliable and valid assessments. Therefore, according to the EBP approach, literature was reviewed and experts (clinical expertise) were asked to propose assessments to determine the performance components. The following tests were found to be the most suitable for evaluation purposes bearing in mind the

time period of the project (4 months) i.e. the Beery-Buktenica Developmental Test of Visual-Motor Integration[20], which included the Visual-Perception test and the Motor Coordination test, the Good-Enough Harris drawing test[22] was used to give an indication of the learner's intellectual ability. The Clinical Observations of postural control[21] was used to assess the sensorimotor components of the learners. In addition learners were observed in the class and during play, individually as well as in a group, to assess the psychosocial components.

Population and population sample

The population of learners consisted of all the foundation phase learners attending the primary school in Genadendal. The sample was selected according to the following inclusion and exclusion criteria to make sure that the research population connected with the aim of the project.

Inclusion criteria:
➢ learners between 5 and 10 years old,
➢ learners living in a rural area,
➢ learners diagnosed with FAS or Foetal Alcohol Spectrum Disorder (FASD). As a number of the learners did not have a diagnosis, learners who showed one or more of the following symptoms were included:
  • showed hyperactivity, poor concentration, short attention span, were absent-minded, had low motor functioning and problems in social behaviour[6],
  • showed no or less than average development on school tasks and came from a social environment where teachers know alcohol use is common,
  • learners attending a primary school in Genadendal.

Exclusion criterion:
➢ problems of the learners could be explained by other congenital causes of social problems.

Ten learners met the inclusion and exclusion criteria. This was 5% of all the foundation phase learners of the primary school in Genadendal.

Results of Part one

Findings of the needs assessment

Assessments of the performance context and area showed the following problems:
➢ classrooms were overcrowded
➢ there was little involvement of the parents
➢ there were too few materials
➢ being a teacher is stressful
➢ there were a lot of learners with different levels of performance in one class.

Assessments of the performance

Table I: Results: Beery-Buktenica Developmental Test of Visual-Motor Integration (1997) and Goodenough-Harris drawing test (1963)

Child	Age (year-month)	Gender	Diagnose	SS VMI	SS VP	SS MC	SS GH (average boy and girl)	SS GH (Self)
1	6 – 11	Boy	N.D.	89	45	108	85	79
2	7 – 5	Boy	N.D.	70	58	90	82	86
3	7 – 11	Girl	N.D.	68	52	85	70	77
4	8 – 11	Boy	FAS/D	59	No score	63	77	77
5	8 – 11	Boy	N.D.	59	No score	77	68	67
6	9 – 1	Boy	N.D.	88	88	93	76	84
7	9 – 5	Boy	FAS/D	78	91	72	102	100
8	9 – 6	Boy	FAS/D	89	83	96	89	92
9	10 – 1	Boy	N.D.	80	63	82	70	75
10	10 – 8	Girl	FAS	45	No score	45	No score	No score

Explanation of abbreviations:
SS – Standard score
VMI – Developmental Test of Visual-Motor Integration
VP – The VMI Developmental Test of Visual Perception
MC – The VMI Developmental Test of Motor Coordination
GH – Goodenough-Harris drawing test
N.D. – Not diagnosed
FAS – Diagnosed with Foetal Alcohol Syndrome
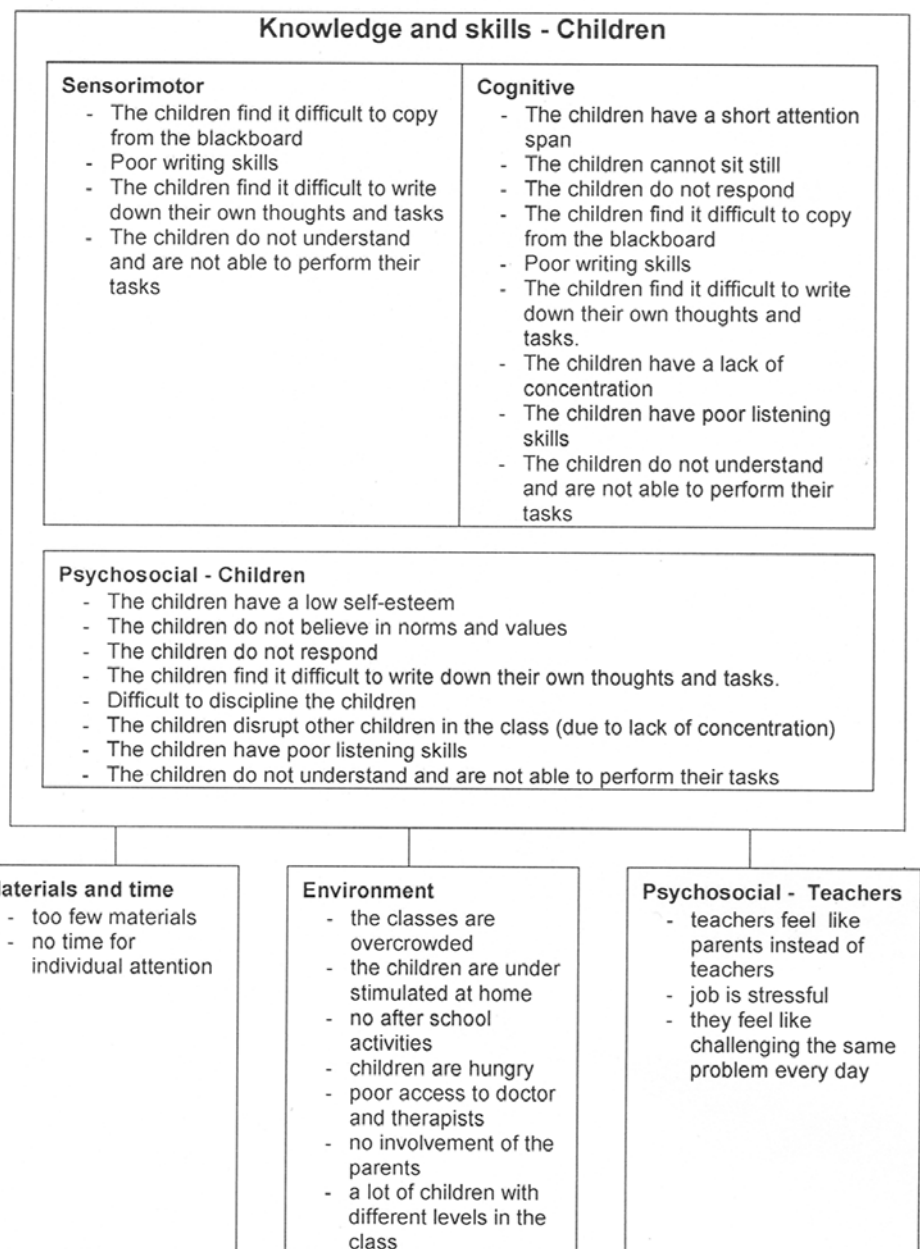FAS/D – Diagnosed with Foetal Alcohol Spectrum disorders

Knowledge and skills - Children

Sensorimotor
- The children find it difficult to copy from the blackboard
- Poor writing skills
- The children find it difficult to write down their own thoughts and tasks
- The children do not understand and are not able to perform their tasks

Cognitive
- The children have a short attention span
- The children cannot sit still
- The children do not respond
- The children find it difficult to copy from the blackboard
- Poor writing skills
- The children find it difficult to write down their own thoughts and tasks.
- The children have a lack of concentration
- The children have poor listening skills
- The children do not understand and are not able to perform their tasks

Psychosocial - Children
- The children have a low self-esteem
- The children do not believe in norms and values
- The children do not respond
- The children find it difficult to write down their own thoughts and tasks.
- Difficult to discipline the children
- The children disrupt other children in the class (due to lack of concentration)
- The children have poor listening skills
- The children do not understand and are not able to perform their tasks

Materials and time
- too few materials
- no time for individual attention

Environment
- the classes are overcrowded
- the children are under stimulated at home
- no after school activities
- children are hungry
- poor access to doctor and therapists
- no involvement of the parents
- a lot of children with different levels in the class

Psychosocial - Teachers
- teachers feel like parents instead of teachers
- job is stressful
- they feel like challenging the same problem every day

Figure 1: Analysis results context, area and components

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Activity level	Activity level means the state of consciousness[33]. In daily life different situations require different activity levels. A low activity level is associated with relaxing at home, while a moderate activity level is needed for performing school tasks. An activity level, which is too high, can cause stress and anxiety[31].
Attention span	Attention span refers to the ability to keep attention focused for as long as necessary to perform a task[30].

components showed that learners have problems with activity level, attention span, visual-motor integration, motor coordination, visual perception, bilateral integration and poor body-concept. Results of the assessments and an analysis of the assessments are shown in *Figure I* and *Table I*.

The Sensory Integration theory[23] shows that, activity level and attention span form the foundation of the developmental sequence. Teachers also mentioned that high activity levels and the short attention span of learners in their classes are their biggest problem. Therefore, from the multiple problems that the teachers experienced, activity level and attention span was prioritised and selected as the focus for the project (see *Table II*). The teachers also felt that they did not have the knowledge and skills to address this problem themselves.

Part two: solutions

Method
The method used for this part of the study was that of a literature search to find the best solution for the problems identified. Thus the search focused on gathering data about compensatory strategies to influence a high activity level and a short attention span. To guide the literature research, the following research questions were used:

➢ Which strategies are useful in influencing the activity level of a learner?
➢ Which strategies are useful in influencing the attention span of a learner?
➢ Which strategies are most valid and reliable?

Different databases were used to search the articles. Databases used were; US National Clearinghouse, SIGN Scotland, PubMed, Cinahl, Cochrane Library, OT Seeker, DARE, OTDBASE and DocOnline. The following keywords and synonyms are examples of those used in the search: occupational therapy, teachers, school, child(ren), FAS, ADHD, development, attention span, activity level, strategies and concentration.

To obtain quality evidence, the articles also had to be evaluated. The publication date of the article is important for the evaluation. In most cases more recent articles can be of better use for a project[18]. Therefore articles from 1996 to 2006 were included in the research. All the articles obtained were read and evaluated. An article was selected if it appeared to be relevant to the project and the research was robust. This was determined by asking the following questions:

➢ What prompted the study in question, and was its purpose clearly stated?
➢ Is the information potentially useful or clinically relevant to the study?
➢ How many people participated, what determined the sample size and is the sample size clearly described?
➢ Was the data collection appropriate for the research[24, 25, 26]?

The strategies identified also needed to be analysed to see if they could be used within the situation of the project, a primary school in Genadendal and the following criteria were used to determine this:

➢ Generalisation: can the strategies described be applied to all learners with problems with activity level and attention span?
➢ Costs: price to implement a strategy e.g. solution. This should be low, otherwise the school would not have the resources to implement the strategy.
➢ Achievability: is it possible to implement the strategies within

the school in question?
➢ Meaning, values and beliefs: are the strategies in line with the values, beliefs and mission of the school[14]?

Results
The findings of the field and literature research which are shown in *Tables III*, *IV* and *V* were presented in a workshop and used to compile a sourcebook. A workshop is an interactive learning situation where participants share information, perform tasks, and then summarise and share results with others[27]. Therefore a workshop was chosen to give teachers the opportunity to gather knowledge and to practise their skills ('doing'). The sourcebook was chosen so that teachers could have a resource to use later in the classroom should they need it.

The information for the workshop and the sourcebook can be divided into two parts: theories and strategies. Theories explain the basis of the solution to the problem which helps teachers to understand why the solution is chosen and is the best for the situation. Strategies explain the content of the solution and include practical information which can be implemented by teachers in the class in different areas.

Theories
Most strategies mentioned in the project are based on two theories: Sensory Integration (SI) and Behavioural Management (BM). The SI theory explains that some children with learning problems experience difficulties in processing and integrating sensory information. These difficulties affect their behaviour and learning[28, 29].

Behavioural management's most basic idea is that children, like all other humans and animals, learn many of their behaviour from their environment[30]. Behaviour involves three components; stimulus, response and consequence. Behaviour may be seen as an event sandwiched between two sets of environmental influences: those that precede the behaviour (stimulus) and those that follow the behaviour (consequence)[31].

Occupational therapy intervention strategies can be divided into three areas: remediation, compensation and education[32, 33]. For this project the compensatory strategy was chosen. Compensatory strategies focus on teaching the client to adapt his or her own occupational performance. These compensations can be made in two areas; tasks and environment[32]. Strategies for adaptation of the person are also included in this project. They focus on how the teacher can adapt his/her behaviour in relationship to the learner and how to adapt the behaviour of the learner.

In addition to the compensatory strategy, the educational strategy was chosen. The teachers needed to learn more about the problems of a learner with a developmental delay and the way in which they can make adaptations to their role as a teacher. Transferring knowledge and teaching new knowledge is part of the educational strategy.

To structure the different strategies obtained from the literature research into the workshop and sourcebook, the Person-Environment-Occupation (PEO) model[34] was used. Change of person, environment or occupation will affect the occupational performance and is therefore a focus of change[35]. By structuring products into the PEO-model, teachers can learn how to adapt one of the three components to change their occupational performance. With the adaptations that the teachers make, they can stimulate the activity level and attention span of the learner and with that the development of the learner.

Strategies related to adapting the person
Strategies related to adapting the person focused on how the teacher can change his or her communication with the learner and how the teacher can react and influence the behaviour of the learner. *Table III* shows strategies from literature and clinical expertise.

Strategies related to adapting the environment
Children do not only learn at school but also at home and it is important to see how both environments can be adapted in order to help the learner. *Table IV* shows the strategies from literature and from clinical expertise.

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Table III: Strategies related to the person

	Subject	What can I do in the classroom?
Communication strategies	**Giving instructions:** The way you give instructions to a child influences the child's behaviour[36, 37, 38,39]	Give frequent instructions[39, 40]
		Give short instructions[37, 38, 41]
	Giving feedback: Children often have a history of receiving much negative feedback[36]	Give frequent feedback[38]
		Give positive feedback to increase the self-esteem of the child[37, 39]
BM strategies	**Strategy:** BM strategies have been successful in increasing the activity level and attention span[36]	Identify the problem behaviour, the target behaviour, the consequences, rearranging the consequences[30]
	Consequences: Consequences can be positive for one child, but can be used negatively for another child	Provide attention and compliments Let the child play with his favourite toy

Table IV: Strategies related to the environment

	Subject	What can I do in the classroom?
School environment	**Classroom:** Children will benefit from a structured environment[39]	Keep your classroom orderly and predictable[39]
		Restructure your classroom by removing distracting stimuli, like toys and books lying around[4, 42]
	Seating: Children will benefit from a non distracting seating arrangement[43, 44]	Let a child sit in front of the class, away from bookcases and open doors
		Provide seating close to the teacher and with personal contact[43, 44]
	Peer tutoring: Working together with a peer who can help the child may decrease problems. When a child can ask questions he will be able to focus longer[36, 37, 38]	Let children perform an exercise together[36, 37, 38]
		Let children discuss work together[36, 37, 38]
Home environment	**Home support:** Learning difficulties can improve when children receive support at home[4]. Parents often have a lack of knowledge about what they can do	Teach parents ways of helping the child[4]
		Communicate with the parents, this can be done with communication booklets or parent-teacher meetings[38]

Table V: Strategies related to occupation

	Subject	What can I do in the classroom?
Altering the task method	**Partial tasks:** Children may feel overwhelmed by large tasks, which cause difficulty in starting with tasks[38, 42]	Break tasks up. This helps the child to understand the task better, concentrate better and to complete the task well[40, 44]
	Variation of tasks: By varying tasks, e.g. preferred-non preferred and active-passive tasks, you can influence the attention span and activity level of the child[36, 38, 40]	Give the child a little break after a completed task so he can prepare himself for the next task[38]
		Let the child help the teacher, for example collecting books after sitting for a time[45]
	Reminders: Providing reminders i.e. cues or signals given by the teacher helps the child to start and complete the task[38]	Directions should be clear, concise and simple[46]
		Use a checklist to help the child get organised, have an agreed upon cue for children to leave the classroom[47]
		Give several reminders, several minutes apart before changing from one activity to the next[47]
		Use personal cue cards with words or pictures of needed materials for a lesson, activity etc.[46]
	Meaningful activities: When children find a task meaningful their attention span will increase[38]	Try to make the information relevant to the child by using experiences that the child can relate to or is familiar with to make connections[46]
Adapting the task object	**Using different objects:** Many children with activity level and attention span problems prefer to do concrete and practical exercises than abstract exercises[4]	Give practical, concrete exercises and give them objects to help them understand the task[4]
	Presentation of the task: Presentation of a task has great influence on activity level and attention span[36, 38, 40]	Number and sequence steps in a task, highlight key points to alert students attention, provide outlines, copies, study guides[47]
	Using visual aids: Children are not always listening or remembering what the teacher tells them. Children may benefit from the use of visual aids as it backs up the spoken information[4, 38]	Use posters with class rules[4, 38]
		Provide individual number lines, alphabet, days of weeks, or calendar, either in a notebook or on the desk[46]
		Provide sequence of days activities, weekly activities, and monthly activities so the student will have a reminder[46]

Strategies related to adapting the occupation

Strategies related to occupation (task) are divided into the method and the objects which are necessary to perform the task. *Table V* shows the strategies from the literature and from clinical expertise.

Part three: follow-up and outcomes of the strategies in practice

Methods

Part three consisted of the workshop with teachers, interviews with teachers once they had a chance to implement the strategies covered in the workshop and observation of teaching sessions.

The strategies were taught to teachers in a workshop with a duration of 2,5 hours. As other teachers in the area of Genadendal had heard of the project and expressed a wish to learn more, a total of 46 teachers, from 4 different schools attended the workshop. The workshop contained lectures and interactive sessions. During the interactive sessions the teachers were able to discuss and to practise the strategies. All teachers received the sourcebook with the strategies, so that they had guidelines for implementation in the classroom.

After two weeks five teachers were interviewed about the strategies and classrooms were observed to see how and which strategies were implemented.

Results

The first results were already visible in the classrooms at interview i.e. after two weeks. Some teachers had changed the classroom structure by removing or covering distracting items and learners who needed more guidance sat closer to the teacher. Teachers also made visual aids to help learners. In one example a teacher put pictures of verbs on coloured papers to show them what verbs were. With the help of this visual aid she identified that even the weakest learners were able to name verbs in sentences on the blackboard.

The reaction of the teachers was that their view on learners with learning difficulties had changed after the workshop. Teachers mentioned that they first only looked at the problems of the learner and what the learner could not do, now they were asking themselves what they could do to help the learner in the classroom.

Discussion

Community project

In the project the CBR principles[16] were applied by involving community members in meetings, asking teachers and parents for problems they experience and working from these problems. This approach resulted in a positive attitude towards the project. Everybody was willing to work and participate in the project and wanted to work with the solutions. The results of the workshop and use of the source book showed that the basis for sustainability had been formed. Teachers became aware of methods to stimu-

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late activity level and increase attention span, and that they could continue applying these strategies after the occupational therapy students had left.

Implications for practice

Strategies taught to the teachers in this project were for learners who present with learning difficulties due to their attention and activity level problems and not only those with the diagnosis of FAS. Therefore the strategies can be used for all children who experience problems with their activity levels and attention span. It is up to the teacher or the occupational therapist to select the most appropriate strategies for the learners.

Occupational therapists can make a contribution to a community through their ability to relate different aspects of occupation, and they can give advice on how to improve occupation. During this project teachers were consulted in order to improve their quality of occupation and with that stimulate and improve the development of learners.

Limitations

Time limit

The time limit for the project was four months. If more time could have been spent on the project, strategies could have been adjusted to the problems of teachers and learners and more attention could have been given to evaluation and follow-up. The teachers mentioned in their evaluation that they would have liked to have a follow-up workshop to discuss the strategies again. This would have allowed for sharing of new information and discussion of any uncertainties that arose through the implementation of the strategies in the classroom. There is a need for evaluation of the project, so that further results and possible problems with implementing the strategies can be identified.

Use of experts

In creating a sourcebook it is important to perform a literature search and to obtain the input of clinical experts[14] in the field. Experts have knowledge about the community and can give information about community based strategies. Initially the use of an expert panel was planned within the project. Unfortunately only one participant was able to join the planned focus group. Instead of the focus group a questionnaire was sent to the experts, but only one completed questionnaire was returned. The time period was too short to send a reminder to the experts, so no further responses could be collected. As a result, the knowledge of experts was not extensively used in this project.

Sources and resources

Because of a limited access to databases, full text articles and the limited time range, an extensive literature search was not carried out. This minimised the available articles. This limitation resulted in not all of the strategies mentioned in this article being referenced strongly (i.e. more than one source used).

Recommendations

In order to create sustainability of the project it is recommended that:
1. An evaluation of this project be conducted.
2. A follow-up workshop with teachers be presented.
3. More assessments with the learners be performed.
4. Experts should be consulted to increase the suitability of the project.

Conclusion

It can be said that different strategies can be applied in the classroom to stimulate the activity level and attention span of the learner with FAS. The project showed that strategies can be divided into different areas: person, environment and occupation. From observations and the responses of teachers after the workshop, it became clear that these strategies were effective. They could be easily applied by the teachers, they did not cost teachers extra time, materials and/or money and some very positive results were shown within a short period of time.
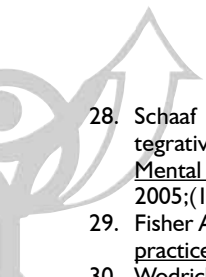
References

1. McCreight B. Recognizing and managing children with Fetal Alcohol Syndrome/ Fetal Alcohol Effects: a guidebook. Washington DC: CWLA Press; 1997.
2. Deane N. Gezondheid: het papsak-syndroom. Zuidelijk Afrika Magazine 2005/2006; (9)
3. Faith Based Alliance for Social Development. Community Profile: Genadendal cluster. 2003.
4. Weiner L, Morse BA. Intervention and the child with FAS. Alcohol Health Research World 1994;(18):67-72.
5. Jenniskens R. Genadendal op blote voeten: een samenwerkingsproject in Theewaterskloof. Sensor 2005;(10): 8-11.
6. Riley EP, McGee CL. Fetal Alcohol Spectrum Disorders: an overview with emphasis on changes in brain and behavior. Symposium: San Diego State University. San Diego: Department of psychology and the center for behavioral teratology: 2005.
7. Clarren SK, Smith DW. The Fetal Alcohol Syndrome. New England Journal of Medicine 1978;(298):1063-67.
8. Kielhofner G. Conceptual foundations of occupational therapy. Philadelphia: F.A. DAVIS; 1997.
9. Case-Smith J. Occupational therapy for children. 5th edition. St. Louis: Elsevier Mosby; 2005.
10. Kielhofner G. Model of Human Occupation: Theory and application. Lipponcott: Williams & Wilkins; 2002.
11. Nederlandse Vereniging voor Ergotherapie. Beroepsprofiel ergotherapeut. Utrecht (the Netherlands): Lemma; 1999.
12. Kuiper C, Verhoef J, de Louw D, Cox K. Evidence-based practice voor paramedici. Utrecht (the Netherlands): Lemma; 2004.
13. Strong J. Seeing beyond the clouds: best practice occupational therapy. Canadian Journal of Occupational Therapy 2003;70(4):197-202.
14. Grol R, Wensing M. Implementatie: effectieve verandering in de patiëntenzorg. Maarssen (the Netherlands): Elsevier Gezondheidszorg; 2001.
15. Deusen J, van, Brunt D. Assessments in occupational therapy and physical therapy. Philadelphia: W.B. Saunders Company; 1997.
16. Kronenberg F, Simó Algado S, Pollard N. Occupational Therapy without borders. Edinburgh: Elsevier Churchill Livingstone; 2005.
17. Dunn W. Best practice occupational therapy: in community service with children and families. Thorofare: SLACK Incorporated; 2000.
18. Baarda DB, Goede MPM, de. Basisboek methoden en technieken: handleiding voor het opzetten en uitvoeren van onderzoek. Groingen (the Netherlands): Wolters-Noordhoff; 2001.
19. Migchelbrink F. Praktijkgericht onderzoek in zorg en welzijn. Utrecht (the Netherlands): Uitgeverij SWP; 1996.
20. Beery KE. Beery-Buktenica Developmental Test of Visual-Motor Integration; Administration, Scoring and Teaching Manual. New Jersey: Modern Curriculum Press; 1997.
21. University of the Western Cape (UWC). Clinical observation of postural control and coordination; Administration and interpretation. Bellville: UWC; 1986.
22. Harris DB. Goodenough-Harris Drawing Test; Manual. New York: Harcourt Brace Jovanovich, Inc.; 1963.
23. Kramer P, Hinojosa J. Frames of references in pediatric occupational therapy. 1st Edition. Baltimore: Williams and Wilkens; 1993.
24. Hammell KW. Informing client-centred practice through qualitative inquiry: evaluating the quality of qualitative research. British Journal of Occupational Therapy 2002;(65):175-184.
25. Kampstra T, Langelaan M. Evidence Based Practice: bewijs en nu?. Nederlandse Tijdschrift voor ergotherapie 2002;(6):219-222.
26. Hammell KW, Carpenter C, Dyck I. Using qualitative research: a practical introduction for occupational and physical therapists. Edinburgh: Harcourt Publishers Ltd; 2000.
27. Hagedorn R. Tools for practice in occupational therapy. Edinburgh: Churchill Livingstone; 2000.

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28. Schaaf RC, Miller LJ. Occupational therapy using a sensory integrative approach for children with developmental disabilities. Mental Retardation and Developmental Disability Research Rev 2005;(11):143-148.

29. Fisher AG, Murray EA, Bundy AC. Sensory Integration: theory and practice. Philadelphia: F.A. Davis Company; 1991.

30. Wodrich DL. Attention-Deficit/ Hyperactivity Disorder: what every parent wants to know. Baltimore: Paul H. Brookes Publishing Co; 2000.

31. Lerner JW. Learning disabilities: theories, diagnosis and teaching strategies. 6th Edition. Boston: Houghton Mifflin Company; 1993.

32. American Occupational Therapy Association. The guide to occupational therapy practice. Bethesda: The American Occupational Therapy Association; 1999.

33. Neistadt ME, Blesedell Crepeau E. Willard and Spackman's Occupational Therapy. Philadelphia: J.B. Lippincott Company; 1998.

34. Hagedorn R. Foundations for practice in occupational therapy. Edinburgh: Churchill Livingstone; 2001.

35. Townsend E, Stanton S, Law M, et al. Enabling occupation: an occupational therapy perspective. Ottawa (Ontario): CAOT Publications ACE; 2002.

36. Gardill MC, DuPaul GJ, Kyle KE. Classroom strategies for managing students with attention-deficit/ hyperactivity disorder: practical help for teacher who may feel overwhelmed and frustrated dealing with challenging behaviour. Intervention in school and clinic .1996 (32):89-94.

37. Brim SA , Whitaker DP. Motivation and students with attention deficit hyperactivity disorder. Preventing school failure.2000 (44):57-60.

38. Reid R. Attention Deficit Hyperactivity Disorder: effective methods for the classroom. Focus on exceptional children. 1999. (32):1-20.

39. Montague M, Warger C. Helping students with attention deficit hyperactivity disorder succeed in the classroom. Focus on Exceptional Children. 1997(30): 1-16.

40. Mulligan S. Classroom strategies used by teachers of students with ADHD. Phys Occup Ther Pediatr 2001;(20):25-44.

41. Owens KB. Child & Adolescent Development: an integrated approach. Belmont: Wadsworth/ Thomson Learning; 2002.

42. Stevens SH. Classroom success for the LD and ADHD child. Winston-Salem: John F. Blair Publisher; 1997.

43. Smith CR. Learning disabilities: the interaction of learner, task, and setting. Boston: Allyn & Bacon; 1998.

44. American Academy of Pediatrics. Clinical practice guideline: treatment of the school-aged child with attention-deficit/hyperactivity disorder. Elk Grove Village: American Academy of Pediatrics; 2001.

45. Munden A. The ADHD handbook: a handbook for parents and professionals on attention deficit hyperactivity disorder. London: Jessica Knigsley; 1999.

46. Hess D. "Fetal Alcohol Syndrome and Educational Strategies". Emory University Fetal Alcohol Syndrome Research Project. 2005. <http://www.psychiatry.emory.edy/PROGRAMS/GADrugs/Edfas.hrm> (1 Sep 2008)

47. Watson S. "Practical Strategies For The Classroom". Strategies for Special Education. May 2003. <//specialed.about.com/cs/teacherstrategies/a/Strategies.htm> (1 Sep 2008)   ❏

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