Holistic or Sequential Approach to Curriculum: What Works Best for Young Children?

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• **Summary:** *In this article two approaches to constructing a curriculum for young children are considered: the Holistic approach and the Sequential approach. In both constructs all developmental areas are included in a longitudinal line of development for children aged three to six. In the Holistic approach all of the developmental areas are integrated around a unifying theme to which all of the activities are connected. It is a horizontal approach with no hierarchy in difficulty or complexity. In the Sequential approach each developmental area is considered separately with no relationship to the other areas. It is a vertical approach with a distinct order of difficulty and complexity. Which approach is most effective for the optimal development of young children? Which approach is structured in a way that is most natural for children and provides for both the development of children's self regulation and optimal stimulation of learning by the teacher? It is concluded that the holistic approach works best with a sequential framework as structuring principle. Both holistic approach and sequential framework are applied in the Pyramid Method (Van Kuyk, 2003, 2009). Research makes clear that this approach works in practice.*

Keywords: Holistic approach, sequential approach, curriculum design, young children, play, initiative learning, projects, play-learning environment, scaffolding, Pyramid method.

Enfoque Holístico o Secuencial Curricular: ¿Cuál Es más Efectivo con los Niños?

• **Resumen:** *En este artículo se consideran dos enfoques respecto a la construcción de un curriculum para los niños: el Enfoque Holístico y el Enfoque Secuencial. En ambos constructos, se incluyen todas las áreas del desarrollo mediante una proyección longitudinal del desarrollo de los niños con edades entre los tres y los seis años. En el Enfoque Holístico se integran todas las áreas del desarrollo en torno a un tema unificador al cual se hallan conectadas todas las actividades. Este enfoque constituye una*

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aproximación horizontal no jerárquica en lo concerniente a complejidad o dificultad. En el Enfoque Secuencial, se considera cada área del desarrollo de manera separada y sin ninguna referencia respecto a las otras áreas. Es una aproximación vertical con un orden diferente de dificultad y de complejidad. Cuál enfoque es el más efectivo para el desarrollo óptimo de los niños? Qué enfoque se halla estructurado de tal manera que sea el más natural para los niños y contribuya tanto al desarrollo de la auto-regulación de los niños como de la estimulación óptima del aprendizaje por parte del profesor? Se concluye que el Enfoque Holístico funciona mejor con un marco secuencial como su principio estructurador. Tanto el Enfoque Holístico como el Enfoque Secuencial se aplican en el Método Piramidal (Van Kuyk, 2003, 2009). La investigación explica que este enfoque funciona en la práctica.

Palabras clave: Enfoque Holístico, Enfoque Secuencial, diseño curricular, niños, juego, aprendizaje de iniciativa, proyectos, ambiente aprendizaje-juego, andamiado, Método de la Pirámide

As Aproximações Holística ou Seqüencial para o Curriculum: Qual É a Melhor para as Crianças?

• **Resumo:** *Duas aproximações respeito à construção do curriculum para as crianças são consideradas neste artigo: as Aproximações tanto Holística como Seqüencial. Todas as áreas do desenvolvimento são incluídas numa linha longitudinal de desenvolvimento para crianças com idades entre três e seis anos em ambos construtos. Na Aproximação Holística, todas as áreas do desenvolvimento são integradas em redor de um tema unificador ao qual estão conectadas todas as atividades pertinentes. É uma aproximação horizontal sem nenhuma hierarquia de dificuldade ou complexidade. Na Aproximação Seqüencial, cada área de desenvolvimento é considerada separadamente e sem nenhuma relação com as outras áreas. É uma aproximação vertical com uma ordem diferente de dificuldade e complexidade. Qual aproximação é a mais efetiva para o melhor desenvolvimento das crianças? Qual aproximação está estruturada de modo que seja muito natural para as crianças e forneça uma estimulação ótima da aprendizagem pela parte do professor para o desenvolvimento de auto-regulaçao das crianças. Se conclui que a Aproximação Holística é mais efetiva com um quadro seqüencial como o seu principio estruturador. Tanto o quadro holístico como o seqüencial são aplicados no Método da Pirâmide (Van Kuyk, 2003, 2009). A pesquisa clarifica que esta aproximação funciona na pratica.*

Palavras Chave: Aproximação Holística, Aproximação Seqüencial, desenho curricular, crianças, jogo, aprendizagem de iniciativa, projetos, ambiente de aprendizagem-jogo, andaime, Método da Pirâmide.

-Implications for Curriculum Development. –Self regulation. –Optimization. –Curriculum approaches. –Holistic approach. –Organizing

Activities within the Holistic Approach. –Distancing steps. –Sequential approach. -Organizing Activities within the Sequential Approach. –Holistic or Sequential: What is the Best Approach? –Conclusion. –References.

Introduction

An effective curriculum for young children is a carefully crafted plan that allows for children's natural impulses to play and explore to be enhanced by the involvement of the teacher. The teacher's role is to honour the natural development of the children by creating rich play and learning environments that encourage children to take initiative, make decisions, and assert self-control. The teacher's role is also to challenge, motivate and support children's learning in order to bring children to higher levels of development than would be possible with their own cognitive power. An effective curriculum must work in close harmony with the natural developmental processes of young children.

To construct such a curriculum, sound and successful developmental theories such as the dynamic systems theory, the distancing theory and the attachment theory are used. In addition, the findings of brain research played a significant role in curriculum design. According to the dynamic systems theory cognitive growth and brain growth show a remarkable resilience and plasticity when children live and learn in adequate environments. The cyclical nature of cortical growth and optimal cognitive development seems to foster these characteristics of resilience and plasticity (Fischer & Rose, 1998). Brain research has implications for structuring the educational environment for young children as well as for educational practice. Two concepts from this theory (Van Geert, 1998, Fischer & Bidell, 1998, 2006) that play an important role in learning and teaching are: self-regulation and optimizing development. The same two concepts also play a role in choosing the best approach to curriculum design: Holistic or Sequential.

Development

The dynamic systems theory goes beyond the theories of Piaget and Vygotsky in describing the development of young children. It is based on the general mechanism of the concepts of assimilation versus accommodation and actual development versus the zone of proximal development. Using these mechanisms, the dynamic systems model arrives at a new synthesis by integrating the fundamental aspects of a wide variety of theories (Van Geert, 1998). The dynamic systems theory describes how the current state of a child's brain develops into another state over a period of time. The next state is a

transformation of the current state according to some explicit model or set of rules (Van Geert & Steenbeek, 2005). Development occurs as a long series of cycles that continue to emerge until about the age of thirty. Short- term cycles involve constructing successive levels of skill or understanding. They are nested in long -term cycles moving through different forms of action and thought. The zone of emergence for each optimal level can be summarized as follows. The four forms of action and thought (tiers) are reflexes, actions, (concrete) representations and abstractions. They form the long- term cycles and the skill levels nested in each tier that grow from single skills, to more complex mappings, to complex systems. Capacities to build reflex skills (species-specific actions and perceptual patterns) emerge in the first dozen weeks of life and eventually produce the first sensory motor actions. Capacities for building more complex sensory motor actions emerge between 3 months and 2 years and eventually create the first concrete representations. Optimal levels for representational capacities develop during childhood, between 2 and 12 years of age. Optimal abstraction capacities appear between 10 and 25 years of age and produce the capacity to build principles relating multiple abstractions. Ages indicate the approximate time at which that level emerges under optimal (high support) conditions, with most skills remaining below that level in ordinary functioning. In ordinary functioning, without optimal support, students vary greatly in their skill levels (Fischer & Rose, 1998).

Development starts very simple and the skills become more and more complex, each constructed independently in parallel for each strand or domain. Within each domain the child develops skills, mostly separately, but they also form intersections between domains. A useful metaphor for this dynamic property is a developmental web, with thinking and learning changing in parallel along multiple strands or domains, as reflected in such concepts as Gardner's multiple intelligences (Fischer & Bidell, 1998). They underline that dynamic structure exists only where there is already a relationship.

We hypothesize eight development areas as we find them in many preschools and kindergartens, as a total concept based on a multiple intelligence model of three intelligences: cognitive intelligence, emotional intelligence and physical intelligence. Cognitive intelligence includes development of perception, development of language, development of thinking, and orientation in time and space. Emotional intelligence includes personality development and social-emotional development. Physical development includes: motor development and artistic development (Van Kuyk, 2009).
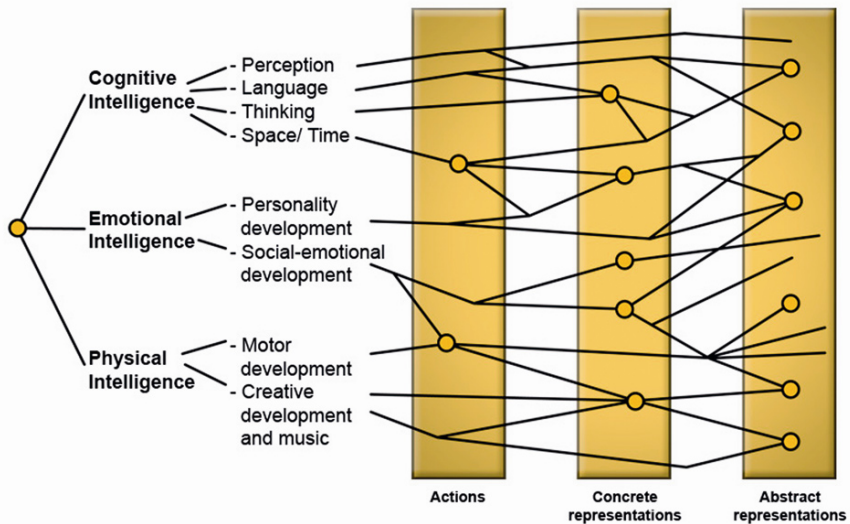
Developmental web

Fig. 1: Developmental web according to Fischer and Rose (1998) and Van Kuyk (2009)

Brain Research

We know that the nervous system undergoes its most dramatic development during the first few years of life (Shonkoff & Phillips, 2000). Recent brain studies have revealed more about how the brain works, thus providing important information about how to structure the environment for maximum support and stimulation of young children's brains.

One new discovery reveals that, in the womb, the foetuses develop a sensibility for human speech characterized by returning intonation patterns, melodies and rhythms. Between all the sounds in the womb the human speech sounds form an orderly constant. Although we have to accept that the developing brain is wired for sound and is able to discover patterns in sound, the order that the brain has to discover is already present in the environment in the form of speech (Leseman, 2004). Some months after birth babies already understand all possible speech sounds, words, and simple sentences. They have insight into meaning, not because they already understand grammar, but because the utterances are delivered in a meaningful context (Tomasello, 2000).

A second new discovery is that children first develop a global system for number and later a more precise verbal system. They first develop a system for global recognition of number, or a global insight for actions with number, such as adding and taking away of entities. This ability is strongly connected with

seeing and visual memory. It enables the child to estimate global number and to have a reasonable idea of the result of a sum, but not exactly. The second system is an exact system that is reserved for exact recognition of number, for exact arithmetic operations and for the exact storage in memory. Babies have already developed a global system. They already see the difference between a set of two objects and a set of three objects. The development of the second system, the verbal system, starts with counting at around the age of three. When the child counts, the set suddenly gets an exact number and an exact place in a row (Sarnecka & Gelman, 2004).

Implications for Curriculum Development

1. In developing a curriculum that fits with the natural development of young children, we have to operationalize an educational format in which the short and long term cycles of learning are represented. We have to create an ongoing developmental line that continues to rise over a period of time as children engage in actions that produce concrete representations that move in the direction of increasingly abstract representations.
2. For the development of each domain and the integration of these domains, we have to find approaches in which each developmental area can be optimized and in which relationships are created between the developmental areas.
3. There is a certain order in the environment and the brain is able to discover structure within that environment. The brain and the nervous system always function in a person's body through specific contexts composed of particular people, objects and events, which support the actions (Luria, 1979). To facilitate the discovery of structures we have to find meaningful contexts that are functional in the world young children's experience.
4. In the curriculum we have to build both a global system and a specific verbal system, which has broader application than for mathematics only. The global system corresponds with the daily environment of children. We have to bring that outside word inside the school. The specific verbal system fits with the hierarchy of developmentally sequenced activities for each developmental area.

The better we can structure the environment for children in a way that is not fixed and determined, but rather dynamic and flexible, the more they will be able to pick up these structures. The better they have picked up these structures, the higher their level of development and the more flexible their ability to learn new information and skills. Children have to play an active role in this ongoing process, so that they can learn to be autonomous and self-regulated in carrying out life tasks.

Self regulation

The growth of self-regulation is a cornerstone of early childhood development that cuts across all domains of behaviour. Regulation is a fundamental property of all living organisms (Shonkoff & Philips, 2000). At birth the child is a helpless creature that needs powerful protective responses from nurturing adults. Normal development can be viewed as an increasing capacity for self-regulation, particularly in the child's ability to function more independently in personal and social contexts. As children grow they begin to acquire behavioural, emotional and cognitive self-control essential to competent functioning throughout life (Kopp, 2000). Self- regulation is at the heart of effective curriculum for young children. Children need both physical and psychological space in which to develop their skills of autonomy and self-regulation. This requires a physical space that allows for the child's choice and the child's competence in a rich environment and psychological space in which teachers respect the children's ability to make decisions and learn from the consequences of those decisions.

Optimization

While we know that children have to develop a strong sense of autonomy, we also know that children will stay at the same level of development for a long time without input from others with more knowledge and skills. For example, when a young child tries to put blocks into a shape-sorter, he chooses the round block for a long time because it is easy to put the round block into the round hole. When he gets frustrated trying to put more difficult shapes into the holes, he will simply lift up the lid and put the block in the 'big hole'. Simple solution, problem solved!

From research in the dynamic system theory we know that when children are supported by an adult they can reach much higher levels, even an optimal level (putting difficult blocks in the right hole). The highest skill level when functioning independently (under low support) for a given domain, is referred to as a functional level. The highest level with high support level conditions is an optimal level (Fischer & Bidell, 1998, 2006). The support of the teacher is much more powerful than self-regulation alone. Through the support the child learns and relearns in every growth cycle on a higher level. Expert scaffolding (the teacher is an expert in the subject and asks relevant questions and gives relevant cues) is the best way to bring children to an optimal level. The support helps the children propel themselves towards a higher level of performance. Therefore, an effective curriculum for young children should have a balance between allowing children to be self-regulating and offering targeted support in learning tasks.

Curriculum approaches

How do we use all the information from research and best practices to create an optimal learning environment for young children? How can we structure the environment so that children can move fluidly from concrete to abstract thinking? What curriculum approach offers the greatest advantage to growing minds and bodies?

We previously introduce two possible approaches to curriculum development: a Holistic approach in which all the development areas are integrated and a Sequential approach in which all curriculum activities are discrete and ordered from simple to complex and from concrete to abstract. Let's look closer at each approach in relation to its capacity to offer children opportunities for both self-regulation and optimization of development.

Holistic approach

The Holistic approach integrates all developmental areas in an environment that is carefully designed to encourage discovery and exploration. Classroom materials allow children to interact with the world familiar to them. A unifying project focus (theme) that is interesting to the children connects learning experiences across all developmental areas to form a developmental web. This integration of developmental areas results in children reaching higher levels of thinking (Fischer & Rose, 1998). This approach carefully balances the opportunity for children to initiate play and learning activities and the responsibility of the teacher to optimize children's development by challenging and supporting their learning.

Organizing Activities within the Holistic Approach

To fully benefit from play and learning activities children have to feel safe and secure. This is true for all curricular approaches. We have to structure the environment physically and socially in such a way that children feel safe. In an environment where children feel unsafe, their energy is devoted to protecting themselves and they are not open to new experiences (Bowlby, 1969, Erickson, Srouffe & Egeland, 1985). Negative emotions distract children from learning activities (Van Geert & Steenbeek, 2005). In addition to creating a safe environment we have to offer enough challenge to allow children to structure their learning. It is impossible to create a situation in which we show children the whole world at once. We have to structure the world around the children in space and in time. *In space* means how we present the 'world' or parts of the world in the space that is available to the children for playing and learning. We also represent space through external representations (Sigel, this publication) in media that can be used by children such as objects, models, pictures, picture

books, real situations, films, and DVD's. *In time* means at what moments and for what period of time do we present the 'world'? For this reason planning on a daily, weekly, yearly, and three to six-yearly basis is extremely important.
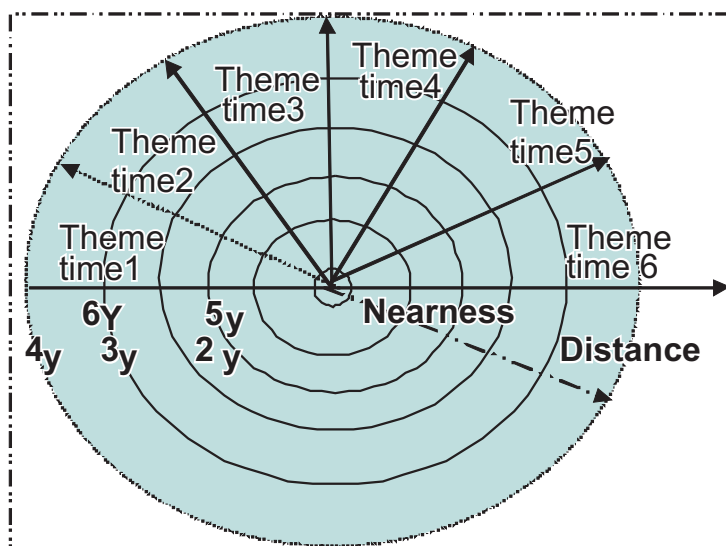
Fig. 2: Presenting the 'World' in space (project focuses, themes) and time (0-6 years) from here and now to distance, in which the non-present becomes present.

In a system of recurring growth cycles, as detailed by Fischer & Rose (1998), it's important to plan the short-term and long-term cycles in which children play, learn and relearn. In this respect we follow the natural course of life in a school. We consider a year as a reasonable time for a long- term cycle in the curriculum. Within that time we plan a series of short- term cycles around the most important project focuses (themes). They offer an effective prototype for a short- term cycle. Each project focus lasts approximately a month and all developmental areas are incorporated in the plans. A more authentic curriculum emerges when all developmental areas are creatively integrated in a natural way rather than artificially inserting developmental activities for the sake of including each area. Project themes that are broad are the best guarantee for the holistic approach. Not every focus lends itself to all development areas, while others are well suited for certain development areas. For instance a focus built around the supermarket offers a natural springboard for mathematical activities. A focus built around the clothing we wear easily lends itself to activities involving language concepts. Fall is conducive to studying time concepts and Celebrations opens the door to social-emotional

concepts. Language has a double function as both a learning tool and as a learning goal. Therefore, language activities must have an extra place in all project focuses based around a network of concepts (See Van Kuyk, 2003).
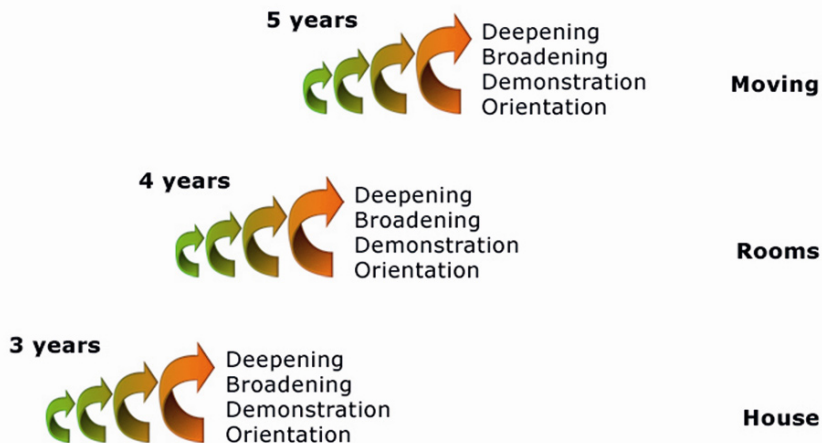
The horizontal planning component of the Holistic approach makes it is necessary to bring in challenging activities that motivate children to be active learners. We do that with the help of a four step learning process that is embedded in every day routines to provide children with the safety of a ritualized process. In these steps we start very close to the child's experiences in the world and we gradually take more and more distance (from actions to concrete representations to abstractions). These principles are based on the distancing theory of Irving Sigel (Sigel, 1993, this publication)., who demonstrated that children of parents and teachers who go beyond the here- and- now have much better perspectives in life tasks than children whose parents and teachers stay within the here -and- now. The role of teachers and parents is to make the non- present, present. They have to involve children in planning, anticipating future events, reconstructing the past, and translating ideas from one mode to another. Children can learn to deal with the non- present and make the non-present present through the following steps (Van Kuyk, 2003):

Orientation: Concrete situation very near to the child
Demonstration: low level distancing
Broadening: medium level distancing
Deepening: high level distancing

Distancing steps

This holistic approach supports the dynamic development model of Fischer and Rose (1998). The learning centres throughout the classroom offer opportunities for growth in all developmental areas. Every month teachers offer children new challenges through changing themes and the introduction of provocative new materials throughout the learning environment. The short- term cycles are activated with the four learning steps in daily group explorations. For example, in the project 'Water' the four steps can be evidenced with activities involving the book *Frog is a Hero* (Max Veldhuijs).

Distancing steps in short and long term cycles of project themes

5 years
Deepening
Broadening
Demonstration
Orientation
Moving

4 years
Deepening
Broadening
Demonstration
Orientation
Rooms

3 years
Deepening
Broadening
Demonstration
Orientation
House

In the first step, **Orientation**, the teacher shares the book by going through the pages. She creates a model of the story in the water table: houses along a river, some high, some low. The low houses are flooded by the enduring rain. Children use a watering can to represent the rain. In the second step, **Demonstration,** she reads the story interactively and provides concrete objects to represent the important characters and objects: (For example: Frog, Hare, bread, warm food, etc). The teacher uses the objects to demonstrate what they are and how they impact the story. In the third step, **Broadening,** the teacher compares the situation in the story with the personal experiences of the children (For example: walking in the rain, wearing rain boots, walking through swampy land, using an umbrella, swimming, and the danger of being drowned.) She also uses another book with a similar situation to the one in *Frog is a Hero* to compare and contrast. In the fourth step, **Deepening,** she guides the children through the important events in the story line (For example: how the animals survived, how Frog became the hero). The teacher also challenges children to consider perspectives to broader problems. For instance, she shows a photo of a car under water in the street and asks the children, 'How did this happen and what could be done to save the car?' She might also bring in photos of the recent flood in New Orleans and ask provocative questions that require the children to use problem-solving skills.

By using this four-step process the teacher helps the children take more and more distance from the starting situation. She carefully works out activities that cause children to think on higher levels (see also Smith, this publication).

The long term cycles, in which the short term cycles are nested, represent

project focuses that increase in difficulty and degree of distancing from one year to the next. For example, the project focus 'House' is first introduced to the youngest children from the perspective of their own houses. The next year the children encounter the house focus from a more distant perspective of rooms in a house. The third year children move to the highest level of distancing and abstraction as they consider the implications of moving from one house to another. See for the division of the project 'House' in the long term cycles also figure 4.

Sequential approach

In a sequential approach we follow the developmental steps of each development area and plan activities that allow children to increase their development levels. The teacher offers activities from each development area in a hierarchy from simple to complex. In this approach all the goals are clear and the teacher knows where the children are in the educational process. There is a hierarchy in which all the activities are ordered. The teacher individualizes instruction by increasing or decreasing the difficulty of the activities.

In a sequential approach the teacher has the possibility of assessing the factual level of development and can give direction to the zone of proximal development. The sequential approach is primarily teacher directed and offers limited opportunities for children to develop self-regulation. Activities often fail to tap into children's intrinsic motivation because they do not authentically meet the needs and interests of the children. When this intrinsic motivation is missing, the teacher will have to work harder to engage children in learning. If the teacher does not motivate the children, learning becomes artificial and uninteresting. Children seek a meaningful context for learning and when the learning activities are decontextualized, the teacher has to entice children with functional contexts and playful activities. Even though the learning goals are very clear in the Sequential approach, the developmental areas lack natural connection and integration.

Organizing Activities within the Sequential Approach

The first task of the teacher is to create an environment for children that is safe, happy and stimulating both from a physical and social perspective. Once this is done, the curriculum can be structured. Sequential structuring is relatively simple since planning for each developmental area is the same. From a list of developmental steps, based on research, varied play and learning activities are chosen (see also Case & Okamoto, 1996): A teacher might choose the following developmental skills and corresponding activities:

- Knowledge of written numerals: activities practicing written numerals
- Knowledge of number words: practicing number words and number rows through singing songs
- Ability to point to discrete objects while counting: presenting objects in different arrangements, ask children to point to each object as they count
- Knowledge of cardinal set values: counting of different amounts of objects and asking: how many did you count?

The Sequential approach offers children strong opportunities to reach targeted goals. For instance, if the teacher is preparing children for reading skills, she can offer clear structures and pathways from simple to complex such as rhyming activities (whole word rhyme, end rhyme, beginning rhyme), auditory synthesis, auditory analysis, and sound-letter combinations. In figure 3 we order the activities of all the 8 development areas over a period of 3 years.
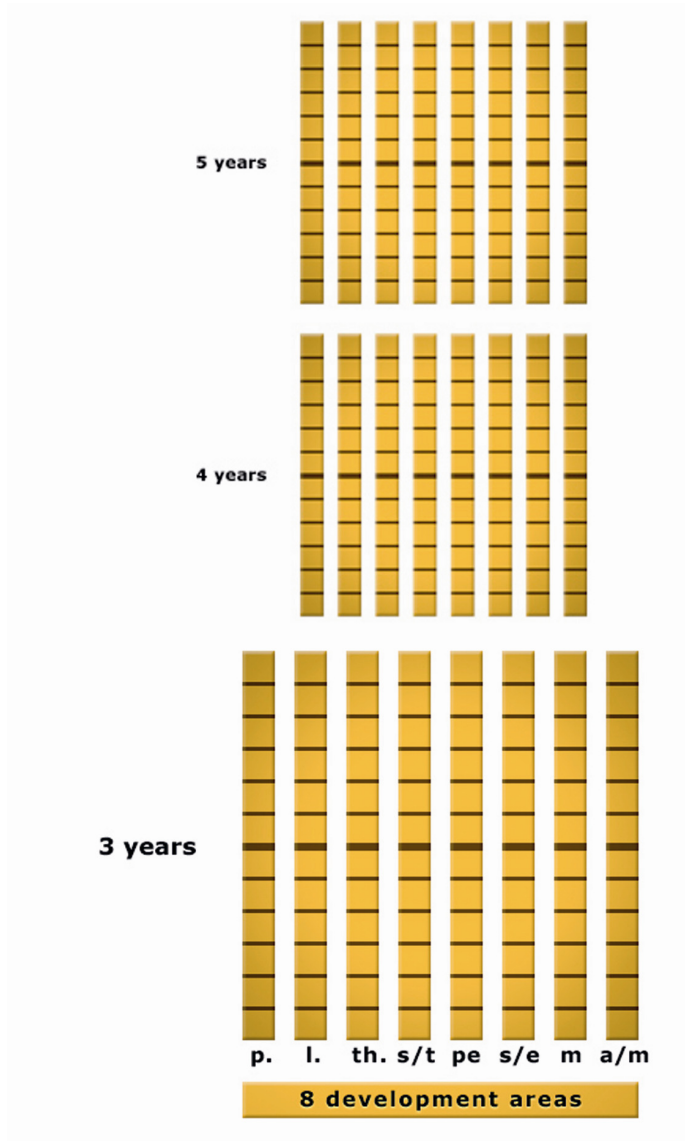
Fig. 3: Structuring of the activities of the 8 development areas over a period of 3 years (3-6). p=perception; l=language; th=thinking; s/t= space and time; pe=personality; s/e=social/emotional; m=motor; a/m= art and music

Holistic or Sequential: What is the Best Approach?

The Holistic approach is clearly the best choice for structuring an effective curriculum for young children. Let's look at some of the reasons. The holistic approach fits with the dynamic development model. We start in media res, in the middle of things, (Fischer & Bidell, 1998, 2006) as children do in their daily activities. It is a better reflection of the natural development process of young children than the Sequential approach and offers better chances in the curriculum to stimulate integration among the development areas. Does this mean that we reject the Sequential approach? As a curriculum approach, yes, but the sequential framework behind the Sequential approach can help us increase the effectiveness of the Holistic approach. The horizontal nature of the Holistic approach means that the project focuses have no difference in difficulty and, therefore, no hierarchy in the focuses. When there are many focuses at the same level, children may not be sufficiently challenged.
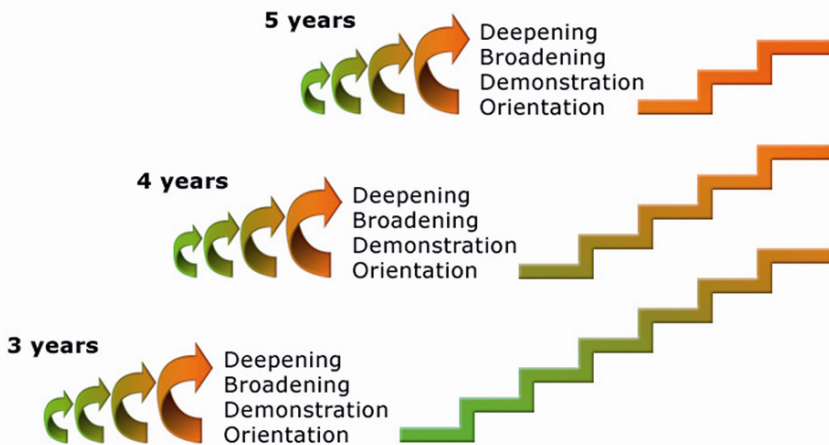
Fig. 4: Long (3, 4, 5 years) and short term cycles (ODBD)of the project focuses over a period of three years and on the right side a representation of the sequential updating of the focuses through the year.

On the other hand, the Sequential approach has a very strong hierarchy. Even though the activities themselves may be novel and interesting, there is no context in which the activities give children the feeling of functionality. This lack of functional connectedness creates a divide between the familiar world of the children and the sterile world of hierarchical skills. Brain research

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tells us that children not only develop a global system, as in the Holistic approach, but also a specific verbal system. The hierarchical ordering of the specific activities of the sequential framework can help us bring in specificity by organizing sequential activities within the context of the project focuses. Learning to tear paper into pieces, snipping with scissors, holding a marker, pencil or pen, drawing, and writing are skills from the hierarchical list of motor activities. Each of these skills can fit seamlessly into a project about My Body as children tear paper to glue onto body outlines, use scissors to cut yarn to make hair, draw the shape of their hands and feet with a marker, draw their portrait as they sit in front of a mirror, and write their own name under their self-portrait.

The sequential framework can also play an important role in designing the play and learning environment. Each learning centre is stocked with a variety of materials that encourage exploration and enhance learning in a range of difficulty. By ordering the materials we facilitate children's brains finding structures within the classroom environment. Here are some examples:

Language Centre
Various instruments for writing, all with varying levels of difficulty
Paper of different sizes and textures
Pens in various qualities
Various types of (picture) books
Various instruments and materials for learning to read, representing multiple levels of difficulty
Alphabet letters
Rhyming activities
Materials for synthesis, analysis, sound-letter combination
Simple reading books for encouraging initiative reading

Thinking Centre
Ordering of materials to stimulate math skills from simple to complex:

Simple:
classification of form, colour, size, dimension; Materials: Classicant
seriation with bigness, thickness, length, highness, broadness with 5 structure; Materials: Serio

More complex:
seriation with10 structure: Materials: Seriant I
seriation with 2 different features in 5 and 10 structure; Materials: Seriant II

comparison and counting:-comparison with strips (5 and 10 structure); indirect comparison; Materials: Comparant

Complex:
counting to 5, 10, 20; matrix with 2 characteristics;
making simple mathematical operations with the help of educational materials: Materials: Comparant.

Finally, the Sequential framework allows the teacher to individualize learning for each child- including children with special needs. She is able to offer those activities that meet the exact needs of each child from very basic to extremely advanced.

Conclusion

An effective curriculum should provide a good balance between promoting children's self-regulation and optimizing their development by the teacher. In the Pyramid Method, play and initiative learning offer children a rich environment in which all the developmental areas can be explored. The children are able to become more autonomous as they play and learn independently. We know that when children play and learn independently they will reach their functional level, but not their optimal level. The teacher plays an important role in optimizing the development of each child. She must divide her energy and expertise among all of the children in the group. She must give the children the support they need to work independently and to solve problems with a minimum of assistance. While offering new skills and information the teacher must focus on individual children, small groups and the whole group. Working with the whole group is very efficient because all the children are reached immediately, but the children's developmental abilities and interests are varied.

Therefore, the teacher will have a high level of interaction in order to reach all the children. Her interventions are most effective and motivating when they are challenging, surprising, and engaging while allowing psychological space for the contribution of each child. In the Pyramid method (Van Kuyk, 2009) the group exploration program offers just such interventions through the use of the four-step process of Orientation, Demonstration, Broadening and Deepening. In several research studies group exploration activities, in connection with self -regulation, proved to be effective.

In one study conducted by the University of Amsterdam, the Cohen effects (.80 is strong, .50 is medium, 30 is weak) were .45 for language and .68 for math. In a second study concerning the Amsterdam Preschool study of the University of Groningen, in which the language program was strongly improved, the Cohen effects were 1.08 for language development and .73 for math development. In a broad Eppe study, Sylva, Nelhuish, Sammons

Siraj-Blachford & Taggart (2005) stressed that 'episodes of sustained shared thinking' are important. Small group activities can be focussed on special subjects, to be effective, or activities to stimulate bright children to solve all kinds of problems themselves or work with technical or chemical materials, followed by reflection (Lück, 2004). Giving children individual help is effective, but distracts the teacher from all other children, when individual attention is needed for a longer time.

Tutoring is an effective but expensive way to work with individual children. The tutor is a special teacher who partners with the group teacher. The tutoring is intended as a preventive measure and can be seen as proactive tutoring that precedes the group activities ahead. This expensive remedy is warranted when children have special needs and require more learning time than other children. According to Slavin, Madden & Karweit (1994), who used the procedure to teach children reading in the first class of primary school, proactive tutoring is effective. We have used tutoring for 3-6 year old children and tutoring proved to be successful in an internal study (Van Kuyk, 2000). The tutoring is most effective when it is connected to the daily program.

It is clear that individualization is necessary to be able to optimize the development of every child. An assessment procedure is necessary to make clear which children need special attention (see also Eggen, 2006). Typically the children who score in the bottom twenty-five percent of the group have the greatest potential to benefit from proactive tutoring. Tutoring is a strategy which can help children succeed later in primary school. Children who score in the top twenty-five percent of the group are bright and need extra challenges to keep them motivated. They can participate in activities associated with the daily program in more advanced ways that increase their degree of self-regulation.
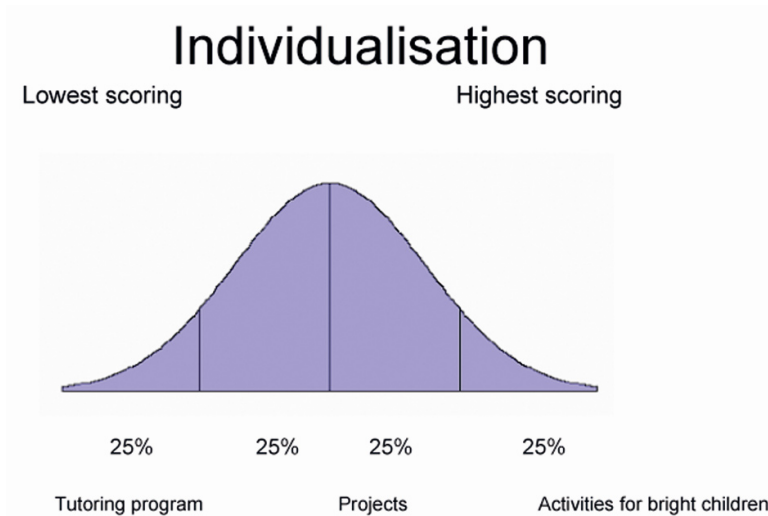
Fig. 5: Individualisation. Gauss Curve: The lowest scoring children get tutoring; the highest scoring children get activities for bright children.

In establishing tests for research and for following the children with a longitudinal student monitoring system, we have used the sequential framework as a basis for test development (Van Kuyk, 2009). The sequential framework offers traditionally strong possibilities for digital test development with a sophisticated methodology of item response theory (Eggen & Sanders, 1994). In the near future we will investigate the possibility of developing dynamic assessment instruments based on the holistic approach and a sequential framework behind.

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