

Title: Multi Sensory Environment (MSE/Snoezelen) – A Definition and Guidelines

Authors:

Eijgendaal, M.; Eijgendaal, A.; Fornes, S.; Hulsegge, J.E.; Mertens, K.; Pagliano, P.; Rowe, J. Verheul, A.; Vogtle, L. K.

Paul Pagliano, Ph.D., Associate Professor in Education at James Cook University, Australia

Maurits Eijgendaal, General Manager of Landsbyen Sound (The Village of Solund), Denmark

Anne Eijgendaal, MA, Lector in pedagogics at Via University College, Denmark

Sandra Fornes, Ed.D, Executive Director, Hidden Angel Foundation, Inc, USA

Jan Hulsegge, Co-founder of the MSE/Snoezelen concept and music therapist at the Hardenberg Center, the Netherlands

Krista Mertens, Ph.D., Professor Emeritus at Humboldt University, Germany

Jan Rowe, Ph.D., Professor of Occupational Therapy at the University of Alabama at Birmingham, USA

Ad Verheul, Co-founder of the MSE/Snoezelen concept and therapist at the Hardenberg Center, the Netherlands.

Laura K. Vogtle, Ph.D., Professor of Occupational Therapy at the University of Alabama at Birmingham, USA

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Abstract:

The level of performance achieved by an individual is a reflection of the sensory stimulation and opportunities afforded the individual by his or her environment. In the 1970, Ad Verheul and Jan Hulsegge created the MSE/Snoezelen concept as an activity for children and adults with intellectual disabilities. Today, the MSE/Snoezelen concept has evolved and is being used with much success in many different environments with a greatly varied demographic. Professionals and practitioners, seeing the therapeutic effects of MSE/Snoezelen, branched out into using MSE/Snoezelen for different applications. These different applications insist on more controls and restrictions than originally intended. Thus, the function, concept and definition of MSE/Snoezelen are often debated. To address this and other issues which could negatively impact the preservation of the original functional concept and positive outcomes of MSE/Snoezelen, a group of professional came together in October 2010, for the 2nd Annual IDEA Forum to discuss these issues. The purpose of these discussions and this paper is to identify important themes around the functions of MSE/Snoezelen with the purpose of developing a conceptual framework, working model, and universal definition that guides and embraces its multiple applications.

Background

We are all sensory beings and we experience our lives through our senses. Sensory organs are referred to as the window to the brain. The maturation of one's nervous system continues to develop during the first six years of life and is dependent upon the successful stimulation of the nervous system via sensory organs. The constant stream of data obtained through our senses helps the brain to interpret our surroundings, giving us vital tools to survive and flourish. A person will fail to thrive and will often withdraw when their environment offers little or no sensory stimulation. Any form of disturbance that disrupts a person's interaction with the environment may impede development and enjoyment of life (Lotan & Shapiro, 2005; Stephenson, 2002).

People with limitations of movement, vision, hearing, cognitive ability, constrained space, behavioral and comprehension difficulties, perception issues, or pain are limited in their interaction with the environment restricting the sensory input that we take for granted (Fornes, 2009). It is difficult for these individuals to create their own optimal environment or sensory experience as their world is often narrow, confined, and in most cases controlled for them. For example, the average person touches 300 surfaces every 30 minutes. We barely perceive the extraordinary amount of stimulation bombarding our every pore, yet we rarely consider how many surfaces a person who is wheelchair-bound touches in the same time frame, as well as the consequences of such limitation. This kind of example can be played out for each of our senses and for every opportunity that we enjoy; such opportunities are often unavailable physically and/or cognitively to individuals with severe and profound disabilities. This limited sensory awareness not only affects our learning abilities, but also disadvantages our quality of life (Hogg, Cavet, Lambe, & Smeddle, 2001; Lancioni, Cuvo, & O'Reilly, 2002; Stephenson, 2002).

Learning and motivation depend largely on the senses. On a moment-by-moment basis, sensory experiences affect our motivation, attitudes, emotions, learning, physical activities, and our very being (Lotan & Shapiro, 2005). The level of performance achieved by an individual is a reflection of the stimulation and opportunities afforded the individual by his or her environment. Multi sensory stimulation that is produced in

sufficient frequency, intensity, and duration increases brain arousal leading to a more organized brain that permits increased functional activity and learning. By working toward a better organized, stronger, and more efficient nervous system, individuals become better able to demonstrate and access their true potential. Intense periods of sensory stimulation that use repeated movement, sound, touch, and visual exercises help slowly to create new neuro pathways in the brain where they were damaged or underdeveloped (DeBoer & Sutanto, 1997; Robbins, 2000).

Sensory learning is not a new topic. Aristotle believed that knowledge was acquired through sensory experiences from the environment and that sensory information was the basis of all knowledge. Maria Montessori (1870–1952) argued that intellectual disability was, in part, a result of impoverished institutional environments that provided no sensory stimulation and therefore intellectual disabilities should be treated as an educational, rather than a medical, issue. The first recognized form of multi sensory stimulation for people with severe cognitive disabilities, called sensory cafeterias, was employed by Cleland and Clark in 1966. These researchers reported that well-chosen sensory stimuli could promote development, improve communication and positively affect behavior for children with developmental delays, intellectual disabilities, autism and those that are withdrawn from their environment. In the mid 70s, Jan Hulsegge and Ad Verheul founded and developed the *snoezelen* philosophy, based on the premise that for an individual with profound disability, multi sensory sensations were more powerful means of communication than any initial appeal to intellectual capabilities (Hulsegge & Verheul, 1987).

While Cleveland and Clark first spoke about multi sensory stimulation as sensory cafeterias for children with developmental disabilities, it was Ad Verheul and Jan Hulsegge who expanded and materialized the MSE/Snoezelen concept as a leisure activity for children and adults with disabilities. Even as early as the 1970, before the social model of disability was relevant, Ad and Jan understood its importance and embraced the social model in their treatment approach of individuals with disabilities by providing MSE/Snoezelen activities with empathy, dignity, and respect for those they served. The social model views disability as a consequence of environmental, physical,

social and attitudinal barriers that prevent people with impairments from maximum participation in society (Disabled Peoples International, 1998).

Today, the MSE/Snoezelen concept has evolved and is being used with much success in many different environments with a greatly varied demographic. They can be found in schools for children with autism, learning disabilities, and for children with and without special needs; in hospitals for people with traumatic brain injury; in retirement homes for people with Alzheimer's and dementia; and in parks and recreation centers for pure enjoyment and recreation. Professionals and practitioners, seeing the therapeutic effects of MSE/Snoezelen, branched out into using MSE/Snoezelen for different applications such as education and therapy. These different applications insist on more controls and restrictions than originally intended when using the MSE/Snoezelen approach. Thus, the function, concept and definition of MSE/Snoezelen are often debated. To address this and other issues which could negatively impact the preservation of the the original functional concept of MSE/Snoezelen, a group of professional came together in October 2010, for the 2nd Annual IDEA Forum to discuss these issues and to set forth a conceptual framework/working model and universal definition. This framework and definition encompasses basic guidelines and functional principles. While there are other applications of use, such as in education and therapy, the guidelines and conceptual framework was developed to preserved and maintain fundamental functions of the MSE/Snoezelen beneficial outcomes that have become so important to individual with disabilities.

The purpose of this position paper is to identify important themes around the MSE/Snoezelen philosophy and functions of the MSE/Snoezelen with the purpose of developing a conceptual framework as a working model and universal definition that guides and embraces its multiple applications. The authors discuss the original functions and principles of MSE/Snoezelen and incorporate these principles in a conceptual framework leading to a universal definition. A multilevel platform/model evolved. Important guidelines are provided as well as observed outcomes. The paper concludes with a discussion of the next steps needed to broaden the MSE/Snoezelen concept into other applications.

MSE/Snoezelen - Basic Function and Principles

Based on the outcomes of the discussion at the 2nd IDEA Forum and confirmed by the literature, a multi sensory environment/Snoezelen approach (MSE/Snoezelen) relates to a medium for communication that centers around a natural process of multi sensory stimulation that is accessible, demand-free, choice-driven, empowering, meaningful, and pleasurable, based on the needs and interest of the person. The MSE/Snoezelen is delivered with respect, equality, and human dignity.

The basic functions and principles of MSE/Snoezelen consist of an artificially created environment (room or space) devoted to stimulating all the senses. The room is a safe, comfortable, demand-free environment designed to empower the individual by providing self-choice. The room or space can be passive and/or interactive providing cause-and-effect relationships. The action in the room is facilitated by a three-way interaction between the participant, the skilled companion and the environment itself.

An Artificially Created Environment

While nature provides an ultimate MSE/Snoezelen, an engineered or artificially created environment provides more focused sensory stimulation for people who, due to their disabilities, are not spontaneously able to seek such stimulation on their own (Pagliano, 1999). “Various limitations may impede the ability of an individual to interact with a natural environment in a meaningful way. For example, a blind child may not have the ability to see light in a natural environment; however, in an artificially created MSE/Snoezelen, certain light illuminating equipment, such as the fiber optic, may stimulate the optic nerves” (Pagliano, 1999). An individual with a disability may require an engineered environment to help make it significant and gratifying or they will withdraw emotionally and physically to the security of their own internal consciousness (Pagliano, 1999; Messbauer, 2006). In an artificially created environment the sensory stimuli can be intensified or reduced and provided in a constant and consistent manner, offering more stimuli than the natural environment. For children with disabilities the natural environment may seem chaotic and unpredictable, yet through the use of an artificially created MSE/Snoezelen, a child’s natural environment becomes less chaotic as

he or she learns how to control sensory input in their natural external world (Messbauer, 1999).

Devoted to Stimulation of all the Senses

The multi sensory stimulation approach can be tailored in intensity and frequency of stimulation to individual thresholds (consisting of auditory, visual, tactile, gustatory, olfactory, and kinetic modes) in an attempt to increase arousal and awareness and elicit a meaningful behavioral response (Pagliano, 1999).

Multimodal stimulation (stimulation of three or more senses) has more dramatic results than unimodal stimulation (stimulation of one sense) (Ansell, 1991; Kater, 1989; Gersten, Baker, & Lloyd, 2000). Those in multi sensory environments have more recall with better resolution that lasts longer, evident even 20 years later. Additionally, research has shown that exercise (Bachman & Fuqua, 1983; Bachman & Sluyter, 1988; Baumeister & MacLean, 1984) and repetitive movements in physical activities involving kinesthetic stimulation have led to positive effects on behavioral challenges and improved brain function (Long & Haig, 1992; Morrissey, Franzini, & Karen, 1992). Animal studies have shown that voluntary exercise and movement enhances cognitive performance and protects from brain injury and disease (Friedland, Fritsch, & Smyth, 2001; Van Praag, Christien, Sejnowski, & Gage, 1999). Thus, sensory stimulation needs to also offer kinesthetic stimuli as proprioceptive and vestibular stimulation as well as visual, tactile, auditory, gustatory, and olfactory.

A Safe and Comfortable

An MSE/Snoezelen should be safe and comfortable providing constant and consistent sensory stimulation that produces an atmosphere of trust. All elements of physical comfort, such as temperature, lighting, noise levels, or seating options, must be adjustable to make the MSE/Snoezelen comfortable. Children and adults with multiple disabilities need opportunities for play, relaxation, and enjoyment in a quiet yet stimulating environment. A user-friendly environment that is comfortable and constant is required to facilitate learning and development in the MSE/Snoezelen. Cognitive learning models suppose that people self-regulate their environments and actions, and that new

behaviors are learned and maintained by those interactions between the person and their environment. This can occur only in a safe and comfortable environment.

A Demand-free Activity

MSE/Snoezelen is mainly used as a non-directive, demand-free, leisure, recreational activity, and/or educational tool that has been identified to have therapeutic value (DeBunsen, 1994; Hope, 1998; Hulsegge & Verheul, 1987; Lancioni, Cuvo, & O'Reilly, 2002). The non-directive, leisure nature of MSE/Snoezelen has been emphasized with relaxation, enjoyment, learning, and facilitation of interpersonal relationships (Cavet & Mount, 1995), as well as improvement in brain functioning (Vargas & Camilli, 1999). In a demand-free, self-choice environment, a skilled companion acts only as a guide introducing the equipment to the child. The child chooses what equipment provides the most pleasure and enjoyment. Using an MSE/Snoezelen requires no memory or cognitive reasoning ability. This removes demands on the individual to understand what they are experiencing, thus reducing the tendency for them to feel confused and to withdraw (Pinkney, 1997).

MSE/Snoezelen is more likely to produce positive therapeutic outcomes when used as a demand-free activity. An analysis of studies on the effects of the use of a multi sensory environment showed more positive outcomes when MSE/Snoezelen is used as a demand-free activity (Houghton, Douglas, & Brigg, 1998; Jacobson, Foxx, & Mulick, 2005; Lancioni, Cuvo, & O'Reilly, 2002). This analysis can be compared to voluntary wheel-running in mice and the results of increases in plasticity molecules and cognitive enhancement. On the other hand, forced treadmill running did not improve cognition and increased stress levels (Jacobson et al., 2005).

Designed to Empower through Self-choice

Individuals with severe/profound and multiple disabilities often have limited opportunity to exert control over their environment. As a result, they can feel helpless, lose confidence and become withdrawn and apathetic (Fornes, 2008). In effect, they learn to be more helpless than their disabilities actually make them. In an MSE/Snoezelen individuals are given the opportunity to exert and experience control over their environment. This may be through directed interaction with the equipment, through the

use of a specially adapted remote control, or by communicating their preference to the skilled companion (Fornes, 2009). Through this experience, individuals are given the feeling of independence and choice (Pinkney, 1997).

Self-choice empowers an individual enhancing his/her self-determination which is critical in predicting various performance and satisfaction outcomes (Fornes, 2008). Self-determination theory (SDT; Deci, 1992) is a general theory of human motivation concerned with the development and functioning of personality within social contexts. The theory focuses on the degree to which human behaviors are self-determined or the degree to which people endorse their actions by engaging in the actions with a full sense of choice (Ryan & Deci, 2000). Self-determination contributes to educational and work goals by increasing self-sufficiency, autonomy, and valued life outcomes like community integration, independent living, and inclusion (Fornes, 2008).

Interactive and Passive

MSE/Snoezelen initially was used more as a passive approach providing relaxation, enjoyment, and exploration through sensory stimulation. MSE/Snoezelen has recently moved in the direction of a more interactive program with an emphasis on learning as well. The two approaches (passive and interactive) can be used together to create a more flexible use of the space (Hirstwood, 1994; Hirstwood & Smith, 1996).

The initial experience of a passive MSE/Snoezelen is very novel and thus increases arousal; however, when the novelty wears off the person adapts and becomes bored with the environment that is held constant. Both predictability and constancy are hallmarks to promote anti-stress and the relaxation process. They lower general arousal, but can also create monotony and boredom resulting in sleep. When sleep occurs the individual is unable to learn from their environment. To maintain some level of relaxed wakefulness and exploration, subtle changes can take place in the room and equipment through an interactive approach. To produce changes in arousal and to maintain the individual's level of wakefulness, a skilled facilitator can turn on/off different pieces of equipment, change its color, change the music or the volume, or add more interactivity to the room (Messbauer, 2006).

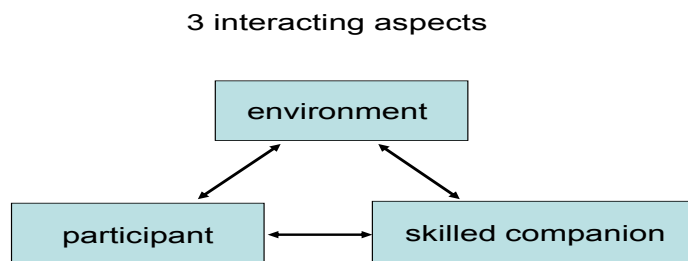
Three-way communication between the user, skilled companion and the environment

A key determinant of an effective MSE/Snoezelen experience is the skilled companion who serves as the first stimulus and guides the participant through the MSE experience. (Haggard & Hutchinson, 1991; Henning, 1994; Hulsegge & Verheul, 1987). The skill companion provides empathetic interaction, not interfering with the person's choice and pace, and guides the person toward sensory stimuli and engagement of objects (Hulsegge & Verheul, 1987). The skilled companions are equals with the participant and both have something to learn from the other.

A skilled companion can be a parent, a sibling, a personal assistant, therapist, or teacher (Andersson & Johansson, 2006). The skilled companion must (a) be empathetic and caring, (b) have an understanding of the participant's sensory needs and interests, and (c) know how to introduce the sensory stimulation to the participant to affect brain arousal that leads to increased enjoyment, focus, motivation, and learning.

The skilled companion presents is significant and meaningful as they are part of the environment and they influence the environment. Thus, there is a dynamic three-way interaction between the skilled companion, the participant and the environment itself as illustrated in figure 1.

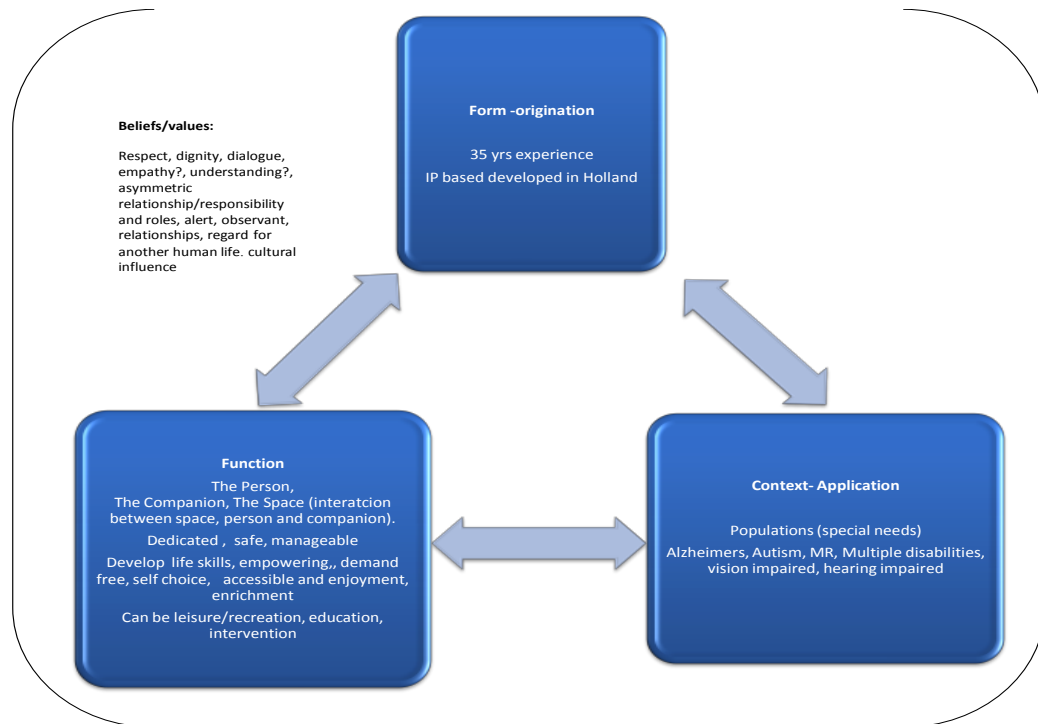
Figure 1 – Three Interacting Aspects of the MSE/Snoezelen Approach.



The MSE/Snoezelen Conceptual Framework

Based on the literature, research, and outcome of the 2nd Annual IDEA Forum, a conceptual framework was developed incorporating the application, function/principles and origination of MSE/Snoezelen as illustrated in Figure 2

Figure 2: MSE / Snoezelen Conceptual Framework



An MSE/Snoezelen is a multi level Intellectual Property (IP) platform that can function in different applications including as a recreation activity, an educational tool, and/or a therapy. However, the basis for all applications is outline in the conceptual framework.

Originating in the Netherland in the mid-1970, MSE/Snoezelen today is used worldwide. MSE/Snoezelen is a dynamic pool of IP developed over 35 years. The initial application was used for individuals with cognitive disabilities. Today, MSE/Snoezelen is used with various populations for both people with and without special needs. Three groups benefit from the use of multi sensory stimulation: (a) those with profound disabilities who, because of a disability, have limited opportunity to access multi sensory stimulation on their own, such as people with intellectual disabilities, dementia, learning

disabilities, etc., (b) those who may have sensory processing challenges and need varying sensory stimulation in order to process self-regulation, such as people with autism and sensory processing issues (c) those without disabilities where multi sensory stimulation and experiencing the environment is a basis for learning and relaxation, such as infants, preschool children, individual with anxiety.

The MSE/Snoezelen functions as a safe, nonthreatening, dedicated space (or room) designed to promote intellectual activity, heighten awareness and brain arousal, and encourage relaxation. MSE/Snoezelen is engineered to bring together multi sensory equipment to stimulate the sensory pathways of touch, taste, sight, sound, smell, and movement without the need for intellectual reasoning. Multi sensory stimulation produces either a calming effect on individuals prone to frustration or stimulation to passive individuals who appear withdrawn (Mertens, 1999). In a multi sensory environment, stimulation can be intensified, reduced, presented in isolation or combination, packaged for active or passive interaction, and matched to fit the motivation, interests, and recreational/educational needs of the user (Pagliano, 1999). MSE/Snoezelen fits the user's needs and interest.

A multi sensory environment is a demand-free environment where individuals can select and experience sensory stimulation on their own, with respect and dignity. Experience is limited when it is not completely controlled by the individual and MSE/Snoezelen provides opportunities for the person to experience the room on his or her own terms.

The MSE/Snoezelen Definition

Incorporating the conceptual framework, MSE/Snoezelen is defined as a dynamic pool of Intellectual property built on an ongoing sensitive relationship between the participant, the skilled companion and a controlled environment, where a multitude of sensory stimulation possibilities are offered. Developed in the mid 1970s and practiced worldwide, the MSE/Snoezelen is guided by ethical principles of enriching quality of life. This shared approach has applications in leisure, therapy, and education, and takes place in a dedicated space suitable for all people, particularly those with special needs including dementia and autism.

Developing Guidelines

Based on the conceptual framework, guidelines were developed to give the skilled companion direction in using the MSE/Snoezelen in a consistent manner to reach the best outcomes. These guidelines for the skilled companion are listed in table 2.

Table 2, Basic Guidelines for the Skilled Companion

Optimal time limit is minimum 30. Maximum time depends on the individual can range between- 60 to 120 minutes.
Should strive to have same skilled companion over a period of MSE/Snoezelen sessions.
Make sure participant physical needs have been meant before entering the room.
Prepare the room before entering the room with the participant. i.e. selection of music, use of curtains, what equipment will be used, selection of cushions/ pillow. The set-up of the space takes into account the needs of the participant.
Be conscious and sensitive of the individual sensory needs prior to using the room.
If participant is fearful and request to leave the room, this request must be honored.
Never leave person alone in the room. The skilled companion must be observant of the participant and be available for interaction and guidance with the participant.
All communication by the skilled companion must support the participant's initiatives.
Communication does not necessary mean by words, it can be by touch, body language,
The skilled companion's present is significant and meaningful part of the environment and an influence on the environment. Keep in mind that the 3 interacting aspects of the MSE is the environment, the skilled companion, and the participant
Room temperature, ventilation, and air circulation must be controlled for the comfort of the participant.
Skilled companion should be open to seeking advice and collaborate with other individuals such as other experts, parents, teachers, therapist, doctors and others if necessary.
Control of the equipment needs to be accessible to the participant so the participant is able to shape the environment in constructive ways.

Potential Outcomes

As identified in the literature, the potential outcomes (see Table 1) of the MSE/Snoezelen are likely to be of a holistic nature and are therefore difficult to isolate in

a particular domain. The following table attempts to identify domain specific outcomes. Because outcomes are the results of the sensitive relationship between the environment, the participant, and the skilled companion, they may vary based on the individual. Given the MSE/Snoezelen is guided by the ethical principles of enriching quality of life, promoting well-being is paramount. MSE/Snoezelen fosters equality, independence, self-choice, and inclusion.

Table 1 – Potential outcomes for the Participant and Skilled Companion

Biophysical	Motor sensory	Social / Emotional	Cognitive
Decrease medication	Energizing	Creates openness toward the environment & others	More focus, aware, and alert
Reduces pain	Calming/Relaxing	Fulfillment / Enjoyment	Motivates
Activates arousal	Balance (flow)	Improved awareness of the participant and his body language	Improved understanding of the participant and his body language
reduces fear and anxiety	Improves motor skills	More focus, aware, and alert	Organizers and guides stimuli to make sense of one's environment
	Activates arousal	Improving relationships	Improve/ Increase memory
	Improves engagement	Increased communications	Activates arousal
		Trustfulness	Improve/enhance learning
		Motivates	Cause & Effect relationships
		Balance (flow)	
		Promotes relationships	
		Reduces fear and anxiety	
		Increased sense of self	

As identified in the literature there have been generalization outcomes that carry over to the external environment when outside the MSE/Snoezelen room. These include less aggressive behaviors and improved relationship with skilled companion.

Conclusion - Next Steps

Like food and shelter, sensory stimulation is a basic human need that is essential to life, survival, learning and quality of life. Just as there is an obligation to feed and

shelter the poor by those who are in a position to do so, so must society assist those who are unable to access sensory stimulation on their own due to disabilities and/or impoverished environments. MSE/Snoezelen can provide such essential stimulation and can be seen as the medium through which an individual lives.

To maintain the integrity and beneficial outcomes of the original concept and function of MSE/Snoezelen, a conceptual framework /model and definition encompassing basic guidelines was developed. While this paper formulated a conceptual framework and definition around the basis of the IP platform of MSE/Snoezelen, this multidimensional IP platform is not only a leisure activity but can be used for other applications such as education and therapy.

The next steps are to explore these other applications and best practices to further develop an all inclusive conceptual framework, working model and guidelines that will assist in directing professional and practitioner in applying MSE/Snoezelen in other fields. Equally important is research in the area of the outcomes and benefits of MSE/Snoezelen to support the significance of sensory stimulation, especially for those individuals with special needs. While observations and case studies have validated the many positive outcomes and benefits of MSE/Snoezelen, more empirical research is needed to support these observations. As with many areas of prevention research, carefully designed studies with well characterized samples, well-designed interventions, and appropriate measures are necessary. The broad conceptual framework introduced here is an essential base to our ability to move from personal experiences to scientific discovery.

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References

- Cleland, C. C., & Clark, C. M. (1966). Sensory deprivation and aberrant behavior among idiots. *American Journal of Mental Deficiency, 71*, 213-225.
- Colker, R. (2005). *The disability pendulum: the first decade of the Americans with Disabilities Act*. New York: New York University Press.
- Fornes, S. L. (2008). Examining a proposed job retention model for adult workers with mental retardation: in supported employment. In F. M. Nafukho (Ed.), *Proceedings of the Academy of Human Resource Development 2008 Annual Conference*. Columbus, OH: Academy of Human Resource Development (AHRD).
- Fornes, S. L. (2009). *Multi Sensory Environments: Developing the theory and guiding practice for future direction: A delivery model developed from an integrative review of the literature, practice and research*. Chrilisan: Birmingham, AL.
- Hogg, J., Cavet, J., Lambe, L., & Smeddle, M. (2001). The use of Snoezelen as multisensory stimulation with people with intellectual disabilities: A review of the research. *Research in Developmental Disabilities, 22*(5), 3532-372.

- Hulsegge, J., & Verheul, A. (1987). *Snoezelen: Another world. A practical book on sensory experience environments for the mentally handicapped*. Exeter, Great Britain: BPC Wheatons Ltd.
- Lancioni, G. E, Cuvo, A. J., & O'Reilly, M. F. (2002). Snoezelen: An overview of research with people with developmental disabilities and dementia. *Disability and Rehabilitation*, 24(4), 175-184.
- Lotan, M., & Shapiro, M. (2005). Management of young children with Rhett disorder in the controlled multi-sensory (Snoezelen) environment. *Brain Development*, 27, 88-94.
- Mertens, K. (1999). *Additional qualification SNOEZELEN: Ideas for a further training and education programme*. Paper presented at the Third World Snoezelen Congress, Toronto, Canada.
- Messbauer, L. (2006). *Snoezelen: state of the art theory and practice*. Colorado Springs, CO: Multi Sensory Environment Training Course.
- Mount, H., & Cavet, J. (1995). Multi-sensory environments: An exploration of their potential for young people with profound multiple learning difficulties. *British Journal of Special Education*, 22(2), 52-55.
- Pagliano, P. (1999). *Multisensory environments*. London: David Fulton.
- Pagliano, P. (2001). *Using a Multisensory Environment: A practical guide for teachers*. London: David Fulton.
- Priestly, M. (2001). Introduction: the global context of disability. In M. Priestly (Ed.), *Disability and the life course: Global perspectives* (pp. 3-14). Cambridge: Cambridge University Press.
- Rocco, T. S & Fornes, S. L. (2010). Chapter 34: Adult and Continuing Education for Adults with Disabilities. In A. Rose, C. Kasworm, & J. Ross-Gordon (Eds.), *The Adult and Continuing Education Handbook*.
- Stephenson, J. (2002). Characterization of multisensory environments: Why do teachers use them? *Journal of Applied Research in Intellectual Disabilities*, 15, 73-90.
- Verheul, A. (2008). *Snoezelen materials homemade*. Ede, Netherlands: Ad Verheul.
- Williams, B. M., Luo, Y., Ward, C., Redd, K., Gibson, R., & Kuczaj, S. A. (2001). Environmental enrichment: Effects on spatial memory and hippocampal CREB immunoreactivity. *Physiology & Behavior*, 73, 649-658.

Checklist for the planning of a MSE/Snoezelen room

THE ROOM

The Room/ Space	The Room Lighting	The Room Seating
<p>Wide door (wheelchair friendly, at least 1m wide)</p> <p>Good ventilation</p> <p>Color design (broken white)</p> <p>Free wall surfaces for projections</p> <p>Floor covering (skid-proof, suitable for wheelchair users)</p> <p>Open spaces for wheelchairs</p> <p>Heating (Radiator covers)</p> <p>Heating cycle (for under floor heating not only under open spaces)</p> <p>Toilets and running water within close proximity</p> <p>Coat rack and shoe shelf in front of Snoezelen-room.</p>	<p>Ceiling lights (adjustable by a dimmer)</p> <p>Additional indirect light</p> <p>Portable lights (floor lamp)</p> <p>Light elements individually adjustable</p> <p>All lights adjustable by a dimmer</p>	<p>Comfortable, adjusted to target group</p> <p>Smooth and closed seating and lounging areas</p> <p>Lounging areas at different levels</p> <p>sufficient cushions, blankets and furs in all different sizes</p> <p>Washable covers for seating and lounging elements</p>
The Room / Projection Area	The Room – Safety Measures	
<p>Mirror decoration materials (for walls or ceilings)</p> <p>A few mobiles (only to be hang up when needed)</p> <p>Fluorescent materials (balls, rings)</p> <p>Materials to touch (only in the entrance area)</p>	<p>Exit marked by luminous sign</p> <p>Seating made off inflammable materials</p> <p>No sharp corners end edges in the room and on furnishings (corner guards)</p> <p>No handles and keys that stick out</p> <p>Steps to be lighted or marked by fluorescent strips</p> <p>Fire extinguishers placed ready to hand by the door</p> <p>Telephone (mobile) with emergency numbers inside the room</p> <p>All technical equipment marked with VDE guidelines and TÜV approval</p> <p>Installation of technical equipment by specialized experts</p> <p>Current partly transformed to 12 or 24V low Voltage.</p>	

Checklist for the planning of a MSE/Snoezelen room

THE EQUIPMENT

Waterbed	Bubble Tubes	Mirror Ball and Spot light
<p>Solid edging</p> <p>Squeeze out air bubbles when (re)filling the bed</p> <p>Refill water and concentrate against deposit of bacteria every six month</p> <p>Wiring to a loud speaker for the sound bed</p> <p>Washable cover</p>	<p>Uncolored or with a color disk (slowly rotating engine)</p> <p>Possibly floating objects in the water (i.e. balls and bubbles adjustable)</p> <p>Fill up regularly with distilled water (Alga lime stop)</p> <p>Place pumps in such a way that they don't cause vibrating sounds</p> <p>12V Safety Low Voltage</p> <p>Wall or ceiling fittings</p> <p>Mirrored background (shatterproof, firm mirror material to avoid distortion)</p>	<p>Mirror ball</p> <p>Not to be fitted at the centre of a room?</p> <p>Quietly and slowly rotating engine (1 Revolution per minute)</p> <p>Spot lights</p> <p>With or without color wheel (color wheels can be self-made)</p> <p>Directed towards the mirror ball (swiveling foot to lighten up other spaces)</p>
Effect Projectors	Fiber Optics, Curtain, Fountain	Music
<p>Basic equipment: three changeable discs (1/2 Revolution per minute)</p> <p>(Basic colors/liquid disc, clouded sky, sunset)</p> <p>Swiveling foot</p>	<p>With strings 3 or 5m long (adjustable speed of light)</p> <p>With or without color wheel</p> <p>Fiber threads merged at the ends and undamaged</p>	<p>CD player and amplifier with remote control</p> <p>Speakers in the corners of the room.</p>
Other Equipment		
<p>Black light</p> <p>Fluorescent hoses in the entrance are or as room divider (adjustable)</p> <p>Milky ways or star carpets with integrated color wheel (slowly rotating)</p> <p>Slide projector (projecting onto the wall opposite)</p> <p>Portable walls as room dividers</p> <p>Mosquito nets</p> <p>Cupboard for materials, tools and sound system (white and smooth)</p>	<p>Keep in mind that some objects can provide both visual and tactile stimulation. For example, the bubble tube is not only visually rewarding, but also provides an auditory aspect from the movement of the water and a tactile component from the vibration of the motor. This allows for a deep sensory experience.</p>	