AUTISM FRIENDLY ENVIRONMENT GUIDELINES

"We will make sure that the classroom environment meets the needs of those children with an Autism profile in order to make them feel safer and more at ease when they are at school."

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RATIONALE OF TASK

> Enabling environments, designed to achieve the best fit, should be congruent with the functional requirements of users. **(Khare & Mullick, 2008)**

The aim of this task is to empower Primary and Secondary Schools in Malta and Gozo to identify the enabling aspects of educational environments and to develop guidelines that will lead to more effective educational spaces for learners in the Autism Spectrum Disorder [henceforth, ASD]. The ultimate aim is to produce Autism friendly environments which improve the educational performance of learners with ASD.

Learners on the autism spectrum vary widely in abilities, intelligence and behaviours (NICHCY, 2007) however, the environment forms the basis for their responses, and serves as an important teaching tool. Grandin & Panek (2014) assert that built environment can have a major impact on learners with ASD as they find the environment confusing, disorientating and even frightening. They are also forced to make an effort in order to understand the environment around them (Sanchez, Vazquez & Serrano, 2011). They continue to argue that inappropriate behaviour of a number of learners on the autism spectrum is due to the fact that there is an imbalance between the environment and the individual's ability to adapt to it. According to Kharem & Mullick, 2008 learners with ASD need structure, clarity, predictability and safety in their school's environment in order to have a positive impact on their learning and performance. Batten (2005) discusses that once a form of disruption is caused in structures and routines, it leads to high anxiety and consequently has an impact on behaviour.

Reed (2011) confirms the importance of the school environment – learner relationship is substantiated when considering that ninety six percent of school teachers agree that the school environment has indeed a form of influence on learner behaviour. Besides this, engendering a sense of safety and security is also very important. Pigozzi & Mou (2010) state that learners are only ready to learn when they are safe and secure, therefore, these areas should be addressed before considering other aspects of the school environment.

When considering a supportively built environment, the design parameters should be fluid and variable in order to take into account variations between individuals on the autism spectrum and their different levels of ability (McAllister & Sloan, 2016).

Learners with ASD meet various challenges in our schools including:

1. Sensitive to loss of personal space and feeling threatened by crowding

For example:

a. Class layout
b. Lack of peer preparation
c. Lack of signs indicating directions
d. Overcrowding in corridors, hall exit/entry, school ground exit/entry.

2. Frustration and arousal

For example:

a. No communication means in place
b. Bright colours in classroom décor
c. School bell/PA system
d. Neon tubes/ceiling fans
e. Clutter in classrooms
f. Brightly coloured educators' attire
g. Strong smells such as perfumes, glues etc.

3. Flight behaviours to avoid social interactions

For example:

a. Lack of withdrawal space
b. Lack of general staff awareness
c. Inappropriate preparation with regards to social and emotional skills.

4. Difficulties or extreme nervousness when switching tasks or even when walking from a given space to another due to being unable to imagine

For example:

a. Inappropriate use of visuals and visual timetable
b. Lack of appropriate transitions
c. Lack of preparation for change in routine using appropriate strategies
d. Lack of colour coded corridors that enhance physical orientation.

The following table indicates design criteria which are specific to each area of challenge that learners with ASD face:

Area of challenge	Description of the challenge	How can architectural design support this?
Imagination	When learners are unable to imagine i.e. to elaborate a mental image of what lies behind a door, this creates anticipation in relation to activities that are to be held soon	Providing a building with a clear structure, along with elements (such as a handrail that runs along walls) that endow it with certain order and unity in such a way that it becomes easily readable, predictable, and imaginable. Colour coding of doors showing the use of the spaces behind them, pictograms or even actual pictures that anticipate what can be found. (Scott, 2009)
Communication	Impairments in verbal and non-verbal communication together with difficulties in information processing	Built environment to accommodate different forms of communication such as pictograms, pictures of objects and people, coding elements with colours, visual background should be as neutral as possible, decluttering the environment, removing superfluous elements, minimizing details and employing reduced non-vivid chromatic ranges.
Social interaction	The person might feel overcome by a socially-demanding situation and might feel impelled to participation in different interactions and thus, needs space where to retire in search of greater intimacy or a simpler interaction.	Providing spaces to allow and favour interactions – these need to be both large and also small spaces

Sensory differences	Difficulties in the reception or processing of sensory stimuli which may include visual, auditory, vestibular, olfactory, proprioceptive or tactile hypersensitivity and hyposensitivity. They might experience sensory dysfunction of pain e.g. a child with autism may suffer burns since even if there are high temperatures, he or she will not pull away from it.	Consideration in selecting colours which are not excessively contrasting, saturated or bright, avoiding high contrast textures and patterns, trying to achieve a diffuse, preferably natural illumination and remembering to avoid fluorescent tubes, as its flickering and buzzing can alter an individual with auditory or visual hypersensitivity, fixtures, heat, ventilation and air conditioning to reduce gradients of temperature and limiting noises and vibrations. Use of thermostatic taps to avoid accidental injuries. Multisensory rooms to allow individuals with autism to attune to their sensory perception- whether mitigating or increasing them in cases of hyposensitivity, and to reduce anxiety at given moments.
Behaviour and safety	Behaviour problems are frequent, and aggressive conduct may arise	Elements present in the built environment must be designed to allow for eventual abuses. e.g. bathroom equipment, lighting fixtures, hardware, banisters, wall and floor tiles must be well anchored.

The present research /task provides an opportunity to evaluate school environments and ensure that these are built or changed in design to reflect the Universal Design. The Universal Design is a paradigm which aims at designing buildings, interiors as well as urban spaces such as schools in such a way that can be used by the largest possible number of learners including those with ASD (Sanchez, Vazquez & Serrano, 2011) Khare & Mullick (2008) devised design parameters which are most beneficial to learners with ASD. These 18 parameters are as follows:

Parameter 1: Physical Structure involving organising the environment with a clear visual and physical boundary to create a definite context for each task in association with a given space.

Parameter 2: Maximize visual structure through the organisation of the visual environment with the use of concrete visual cues such as colour coding, numbers, signs and labels.

Parameter 3: Visual instructions provision in order to indicate the sequence of steps to be followed, when and where a particular activity is carried out. This is done in written format in conjunction with images, pictures, visual schedules etc.

Parameter 4: Providing opportunities for community participation by being involved in everyday social activities.

Parameter 5: Providing opportunities for parent participation, such as school activities to aid in addressing learner's educational needs.

Parameter 6: Providing opportunities for inclusion through an environment that allows learners with ASD to interact with peers.

Parameter 7: Creating an environment to maximise future independence to learn everyday life skills, as well as vocation skills.

Parameter 8: Generous spatial standards that will support learners with ASD to face social demands, since they are rather cautious about their personal space.

Parameter 9: Provision of withdrawal spaces such as quiet areas in which learners with ASD can retire to avoid or mitigate any stress that they are feeling, or when they are in socially demanding situations.

Parameter 10: Maximising safety to ultimately minimize risks, especially in cases of misperception of dangers.

Parameter 11: Maximising comprehension for learners on the autism spectrum to perceive and to apprehend their school environment. This can be done through clear arrangement of spaces, direct routes, neat zoning, and uncluttered interiors.

Parameter 12: Maximising physical access and accessibility due to impairments in movement coordination, balance, restricted attention span as well as epilepsy.

Parameter 13: Enough space to provide assistance in doing learning activities, toilet or dining activities.

Parameter 14: Maximising durability and minimising maintenance costs. For example, equipment, fixtures and fittings need to be durable due to possible aggressions and misuse by learners.

Parameter 15: Minimising sensory distractions that can affect the visual, auditory, tactile etc.

Parameter 16: Facilitating sensory integration through multisensory stimuli within the environment as well as opportunities to roll, jump, spin, practice music, have visual experiences etc.

Parameter 17: Providing flexibility to accommodate a wide range of functional skills as well as various teaching paradigms.

Parameter 18: Allowing monitoring for assessment and planning while being aware of the fact that it is necessary to control or monitor learners with the lesser degree of distraction and intrusion in order to assess them, grant their safety and plan activities, teaching strategies etc.

The table below illustrates how the above parameters best fit into the different sections of the checklist presented in the next section:

Section A	Section B	Section C	Section D	Section E	Section F
Parameter 1	Parameter 10	Parameter 8	Parameter 2	Parameter 4	Parameter 6
Parameter 9	Parameter 14	Parameter 12	Parameter 3	Parameter 5	Parameter 15
Parameter 11		Parameter 17		Parameter 7	Parameter 16
Parameter 13				Parameter 18	

CHECKLIST

A: Physical Layout, Space and Structure

A1. Environment has clear physical and visual boundaries to establish the context of the activity associated with that space	
A2. Available withdrawal spaces to withdraw and avoid unnecessary stress and anxiety in socially demanding spaces.	
A3. Environment has a clear layout, direct routes, clear zoning, and no visual clutter to perceive the school environment easily.	
A4. Enough space for learning activities to be carried out in class e.g. toilet, dining area etc.	
A5. There are no smells of paints or wallpaper pastes in the environment.	
A6. No 'strong' smells drift around the building from room to room.	
A7. General noise level in the environment is not loud.	
A8. There is no noise from flooring.	
A9. General noise level is consistent throughout the day.	
A10. Specific quiet and louder areas in the environment are found.	
A11. Pitch of noise and noise level is considered in the environment.	
A12. Environment is free of unnecessary obstructions.	
A13. Differing heights such as steps, stairs and kerbs that the individual may need to navigate are considered.	
A14. Adjustments for people who have fine motor difficulties such as adjusting locks, cutlery and door handles are considered.	
A15. Rooms are labelled.	

A16. When rooms do not have one purpose only (e.g. the school halls is used for assemblies, concerts and meetings), the function of the room is labelled to avoid confusion.	
A17. 'Literal' meanings when designing the environment are considered.	
A18. The school environment is safe for learners with ASD.	
A19. Access to external play area from the classroom.	
A20. There is an area to 'let off steam' and work off any frustrations.	
A21. The school environment is suitable for people who seek movement e.g. A lot of space, soft play areas, swings or trampoline.	
A22. There are opportunities for learners to move from indoors to outdoors.	
A23. Restrictions on movement and how these restrictions affect the individual learner are considered.	
A24. The environment is suitable for learners who are hypersensitive1 to movement e.g. using support equipment to help with balance.	
A25. Routines are flexible for those who struggle with movement challenges e.g. enough time given for movement during the day.	
A26. Awareness of the absorbing interest of learners in the environment and how these interests are facilitated and managed were considered.	
A27. The distance between the classroom and play area or PE class has been considered, in order to give learners time to prepare themselves for the different activities.	
A28. The whole school and individual planning ensure that clear and realistic targets are set for each learner.	
A29. The resources and accommodations, both physical and material are appropriate to meet the needs of the learner with ASD.	

B: Factors of Control and Safety

B1. Arrangements are in place to ensure that learners with ASD can travel around the school without facing challenges of crowding in classes/recreation areas/corridors etc.	
B2. The building is physically accessible to respond for poor coordination and balance, epilepsy, and poor attention span	
B3. Cleaning material used for cleaning the school is odour free.	
B4. Communication systems are supported by the use of symbols, pictures, photos and objects.	
B5. There is enough safety for people who are hyposensitive2 to touch and how to manage this is considered.	
B6. There is clear guidance at the school on what to do when someone is mouthing or eating inedible food.	
B7. Considerations on whether the school environment is safe for learners with ASD are taken.	
B8. A hurt board is used for learners to indicate which part of their body they are feeling pain in.	
B9. Structured leisure times and choice boards are used for learners to indicate what activity they wish to engage in during break time.	
B10. PECS (Picture exchange communication system) is used at school for learners as instructed by a Speech and Language Pathologist.	
B11. AAC devices are used at school for learners as instructed by a Speech and Language Pathologist.	
B12. The safety and robustness of elements, furniture or fixtures e.g. PVC cover of foam rubber objects are considered.	

C: Factors of classroom character

C1. The environment does not have overly patterned shapes and surfaces that could be visually offensive.	
C2. The central space in the classroom is kept clear.	
C3. The curtains and blinds do not have vibrant colours.	
C4. There is no fluorescent or harsh lighting in the classroom environment.	
C5. Sunlight from windows does not affect and reflect on reflective surfaces.	
C6. There are no clocks ticking in the classroom.	
C7. There is no humming from lights (neon tubes) in the classroom.	
C8. There are no road noises coming through windows in the classroom.	
C9. There are no building/gardening work noises coming through windows in the classroom.	
C10. Furniture in the room is labelled.	
C11. There is sufficient personal space for the learner with ASD to find comfort or to de-stress when necessary.	
C12. There is a working area in the classroom where the learner with ASD can work in.	
C13. The learning environment contains areas of high interest to reflect the particular interests of the learner.	
C14. The arrangements for teaching are sufficiently flexible to allow the learner to complete tasks without undue stress.	
C15. Teaching approaches are broad and sufficient to engage the learner in learning, and promote independent learning in a variety of contexts.	

D: Visual structure

D1. There is an organised visual environment through concrete visual cues including colour coding, numbers, symbols and labelling.	
D2. A sequence of steps to follow an activity is provided e.g. in the form of written instructions, pictures, visual schedules.	
D3. Colours in the environment are low-arousal colours, such as cream and pastel shades, rather than vibrant shades.	
D4. Indicators to point out where hot surfaces are in the environment are available.	

E: Opportunities for participation and inclusion

E1. Learners have the opportunity to be involved in community facilities e.g. shopping, using public transport.	
E2. Parents are involved in school activities to address individual educational needs.	
E3. Learners have opportunities to interact with peers who do not have ASD.	
E4. Learners have opportunities for learning life skills and vocational skills in order to develop independence.	
E5. Environmental considerations towards people with a mix of sensory needs are made.	
E6. Changes in the routine are made known to learners.	
E7. School staff are fully aware of each learner's sensory differences.	
E8. Staff are aware of the concept of Flexibility of Thought3 and challenges faced by individuals who lack this flexibility of thought.	
E9. Considerations are made in relation to the fact that learners with ASD may have difficulties understanding or interpreting others e.g. not being able to empathise.	
E10. Awareness of coping mechanisms for learners with ASD in their environment are considered.	
E11. Staff do not wear strong deodorants, perfumes and aftershaves at school.	
E12. Photographs are used to aid recognition of people (staff & unfamiliar).	

E13. Arrangements for pastoral care and child protection take account of the unique needs of learners with ASD.	
E14. The school has a policy on working with learners with ASD and keeps a record of staff training.	
E15. The staff have a knowledge and understanding of the main strategies for assessing, improving and sustaining high standards of teaching learning and learner achievement.	
E16. The educators at the school can demonstrate an understanding of autism in their work, and have a repertoire of knowledge to assist their teaching approaches.	
E17. The educators have developed an approach which is consistent throughout the school and sufficiently flexible to adapt to changing circumstances and new information.	
E18. The needs of the learner/s with ASD are assessed systematically, and the teaching is carefully matched to their needs and areas of interest.	
E19. Activities are designed to ensure that the child experiences challenge and a measure of success.	
E20. The staff employs information and communication technology as an effective teaching support for the learner.	
E21. Learning outcomes indicate that the learner responds readily to the tasks and makes progress proportionate to his/her ability.	
E22. The quality of teaching and learning is monitored systematically, and a relevant policy is in place to encourage self-evaluation.	
E23. Provision for learners on the autism spectrum in the school is reviewed regularly and, where appropriate, improvements are made.	
E24. The organisation of the curriculum is sufficiently flexible to meet the needs of learners on the autism spectrum.	
E25. The school maintains good links with parents/guardians.	
E26. The school maintains good links with support services and the local community in order to promote the wider needs of learners on the autism spectrum within and beyond the school.	
E27. Appropriate arrangements are in place to affect the smooth transition of learners on the autism spectrum to other schools or settings, and information is transferred on advance of placement.	

F: Supporting sensorial challenges

F1. Multisensory opportunities in the school are available e.g. rolling, jumping, spinning, vibrations, music, different visual experiences.	
F2. Parents are involved in school activities to address individual educational needs.	
F3. Learners have opportunities to interact with peers who do not have ASD.	
F4. Learners have opportunities for learning life skills and vocational skills in order to develop independence.	
F5. A sensory profile of individual learners is implemented.	
F6. There is a known system set up in the school for when a learner with ASD needs to leave from a particular environment.	
F7. There is a space/room at the school with low stimuli and which is safe, where a learner with ASD can calm down following a meltdown or a tantrum.	
F8. Sensory materials such as sand, water, play and textiles are available for individuals to explore in the school environment.	
F9. A variety of materials for each individual learner who seeks sensory stimulation such as textured toys, gym ball are available at school.	
F10. Opportunities for soft play, rough and tumble play for learners to access are available at school.	
F11. A body map, where the learner, can indicate areas they like/dislike to be touched is considered.	
F12. Small tight spaces where learners can squeeze into if they wish to calm down using firm pressure is available.	
F13. A sound system speaker to announce the end of a time tabled period at a reduced volume to that of the school bell is implemented in classrooms.	
F14. Learners who are hypersensitive to touch are warned prior to being touched.	
F15. Windows and doors are shut prior to the start of the lesson to reduce external sound.	

F16. Learners who are hypersensitive to proprioception4 are allowed to sit on a stool instead of a carpet.	
F17. Activities are broken down into small steps.	
F18. Learners who are hyposensitive to the vestibular sense are encouraged to engage in activities such as swings, roundabout, rocking horse, see-saw and dancing.	
F19. Learners are encouraged to use the arm's length rule (you must be at least an arm's length away from someone) when speaking to someone.	
F20. Visual cues are used to back up verbal information.	
F21. Learners who are hyposensitive to sight are encouraged to use resources with a stimulating visual system e.g. light sticks.	
F22. Learners are advised beforehand that there might be a fire drill at school.	
F23. Use of light dimmers to allow staff to create different atmospheres when needed.	

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