Challenges of the Learning Environment in the Inclusive Special Needs Education

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ABSTRACT

Background and aim – Inclusive learning environments are more common today in Finland than before. Students of special needs are taking part to the normal curriculum, which concludes to the reduction of special education groups and facilities. The idea behind inclusion is to remove all barriers limiting the participation to studies and eliminate all forms of discrimination in the learning environment (UNESCO 2019). This brings challenges for example to students with diagnose of autism spectrum disorder (ASD) because many of them have sensory abnormalities. The article aims to find out the major risks of inclusive physical learning environments and what can be done in order to make that environment safe, secure and usable for all its users.

Methods / Methodology – The primary data was collected through interviewing two vocational special needs teachers, one coordinator and two personal care assistants of students at Vocational College in Helsinki Metropolitan Area. In other words, interviews were used as a qualitative data collection method. The interviews were semi-structured, with topics related to the learning environment and organisational safety and security. The data was then analysed by using document analysis.

Results – The main finding of this research was that many students have sensory abnormalities, which is one of the main reasons why for example soundproof classrooms are important. For the same reason, there is a need for rooms where students can study individually. Dedicated spaces for dedicated tasks seems also to be important from the safety and security perspective.

Originality (if applicable) – Studies of the learning environment often focus on the needs of the students who have no learning disabilities such as ASD. There has not been many researches on the learning environments from the safety or security of special needs perspective in a built environment. This research combines all those approaches together, which makes it original.

Practical or social implications – This article presents ways in which various learning environment challenges could be reduced or eliminated and how to prepare for the risks. It gives recommendations in designing, managing and building the inclusive learning environment from the special needs education perspective. In other words, results of this research will give insights in designing, managing and building the inclusive physical learning environment.

Type of paper – Research paper

KEYWORDS

Autism spectrum disorder, safety, security, risk management, learning environment, usability, inclusion.

INTRODUCTION

Today, teaching is moving towards inclusion. There are two different perspectives in the general debate on this issue. Some people say that special needs students should not be transferred to normal teaching. Others think that this is something that should be done in order to make it possible. (Lönnroth 2016.) This paper focus on to the Finnish education system, which is moving towards inclusion. Although the topic is national in nature, it provides interesting information to the international perspective. A little Finnish and international research has been done on this subject from the perspective of safety and security in the inclusive physical learning environment. This report tries to give a holistic framework for safe and secure physical learning environment in the case where all students including special needs students study at the same classes mixed with each other.

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This study gives a general view of the importance of the learning environments and the issues that can be arisen when more special students are included into a normal curriculum. Sensory abnormalities, which are very common with ASD people, pose a challenge to all school activities, especially when the facilities have a lot of people and noise around. This research will look at learning environments from safety and security perspective**.**

The research questions of this study are as follows:
- What are the challenges or dangers faced in the special needs learning environments from the school's staff perspective?
- How can these challenges be avoided or reduced by changing physical learning environment?

Next, we will go deeper in to the literature in order to get better overview and understanding about the issues that could effect on learning environments.

LITERATURE STUDY
In order to understand the specifics of special educational institutions, one must first consider the learning environments, autism spectrum and educational safety and security (S&S) at a general level. Educational S&S has hardly been studied before. There are only two doctoral dissertations made in Finland from an organisational safety and security perspective. Learning environments are usually studied from the perspective of the student following the normal curriculum. There are hardly any new doctoral dissertations from the special needs physical learning environment perspective and the most newest research on the subject is related to the use of virtual or information technology as a learning environment in general. Utilising virtual technology and other computing devices will exclude all students who cannot read, speak and write. It also excludes learners who have challenging behaviours due to sensory stimuli, which in practice will mean that, different devices will not withstand everyday use. In the UK, there has been done some research what the classroom should look like for students with ASD. For example, McAllister (2008), in her article, discusses about that. The specifics of the autism spectrum disorder have been extensively studied, but its impact on safety and security has been limited. Next, this article delves into learning environments, ASD challenges, and educational institution's safety and security.

Learning environments
Traditionally, learning environments can be divided into four parts: psychological, social, pedagogical and physical. The psychological learning environment contains the atmosphere of the learning situation. The social environment includes teachers, students, friends and all networks that support learning and interact with each other. The pedagogical environment includes topics related to teaching design, such as teaching methods and the choice of teaching materials. Physical learning environments are all places where teaching and learning take place. (Piispanen 2008, 18-24.) The breakdown of the learning environment in this study is modeled on that of Piispanen's (2008) dissertation, which combines the psychological and social environments because they may have a strong influence on one another. Piispanen (2008) mentions in her doctoral dissertation that a good learning environment is safe. However, she does not talk more about safety or security in her work.

In the research on the learning environment, the emphasis is usually on 'normal learning environments' and technology. For example, Auvinen (2015) discusses technology and distance learning in his dissertation. Kuusikorpi (2012) deals with the future physical learning environment, which includes various online solutions, student self-directedness and collaborative teaching methods. Piispanen (2008), on the other hand, discusses the learning environment more broadly from the perspective of a good learning environment, which has also been one of the starting points for this research. Vellonen, Kärnä and Virnes (2013, 170) have explored how technology can strengthen the autism spectrum of students in their own way of learning and thus highlight their strengths. Nuikkinen (2009) deals extensively with school building and well-being in different types of learning environments. One of her conclusions is that the experience of security and safety is influenced by the opportunities provided by the learning environment to manage everyday life and to schedule time. Minkkinen (2015), in turn, examines child well-being from both a psychological and a social perspective. She charts the importance of social support when a student is depressed and how bullying is associated with it.

Challenges of ASD

The abnormal sensory and perception abilities associated with the underlying problem of people with autism have been the subject of much research in recent decades (Bogdashina 2003; Delacato 1995; Kootz, Marinelli and Cohen 1982; Rimland 1964). Sensory and perceptual problems can lead to typical behaviours that include anger attacks, self-harm and withdrawal. These behaviours make life easier for the autistic people, but make it more difficult for them act as independently as possible in the future. (Bogdashina 2003; Szedga and Hokkanen 2009.) According to Delcato (1995, 80-84), disorders of the sensory canals can be divided into three parts, which are hyper, hypo and white noise. Hypertension refers to sensory hypersensitivity. Hypo means that the sensory signals are not properly transmitted. White noise, on the other hand, means that the sensory system does not function because it is disturbed by the body's own functioning, causing a background noise. (Decalto 1995, 80-84.) About 80 percent of people with autism have intellectual disabilities (Kaski, Manninen and Pihko 2009, 107). From the interior design perspective, sensory problems creates its own challenges. This is true especially nowadays, because the trend in teaching is inclusion, where the idea is that all students or pupils study and use the same facilities at the same time.

Safety and Security of the educational institutions

Safety can be seen as a state being safe away from danger. We are talking about safety when something unintentional happens that can harm or damage somebody or something In other words, safety measures are actions that protect people, property, reputation from dangerous or other unwanted situations. (Martikainen 2016, 22.)

Security can be seen measures against an intentional and violent attack and danger, which leads to injury harm or damage. Those security actions are made to make sure of the safety of a person or a building or a country. (Martikainen 2016, 22.) According to SFS-ISO 28000 (2012, 11) security can be seen as the resistance to an intentional, unauthorized act that is intended to cause harm or damage (SFS-ISO 28000:2012, 11).

The basis for the safety and security of vocational schools can be found from Chapter 80, Section 9 of the Act on Vocational Education and Training (531/2017), which states that everyone has "the right to a safe and secure study environment." The Basic Education Act (628/1998) also emphasises everyone's right to a safe and secure study environment. Safety is a multidimensional concept, which means that it can be subjective or objective (Levä 2003, 31-35). The areas of organisational safety and security include: "1 occupational health and safety, 2) information security, 3) crime prevention, 4) environmental safety, 5) premises security, 6) contingency planning, 7) personal security, 8) rescue operations, 9) safety and security of production and operations and 10) security of operations abroad. The assets, such as image, persons, information, material and environment, including learning environment, are protected by means of organizational Safety and Security Management." (Martikainen 2016, 42). This means that the educational and the organisational safety and security concept are almost the same. The difference is that educational safety and security has one more angle, which is the student care that promotes learning and balanced development. (Waitinen 2011, 65.)

This means that, from an organisational perspective educational safety and security is quality work. It is risk management and ensuring that the school's operation is not disturbed. It can be managed through different systems. (Kerko 2001; Martikainen 2016; Molarius 2016; Lanne 2007; Levä 2003; Simola 2005; Tanninen 2008 and Waitinen 2011.). However, it should be noted that management systems such as the occupational safety system ISO 45001 do not necessarily guarantee safety (Ghahrami 2016, 67). Ghahrami (2016) and Writh and Sigurdsson (2008) see safety culture as an important driving force for achieving a safe work environment. Therefore, it can be assumed that the learning environment of an educational institution will not be safe and secure by a mere occupational safety system, but it will also require other things, such as a good interactive safety culture and a safe physical environment.

A safety culture is part of an organisational culture that leads to a certain way of working safely. (Reiman 2000, 8; Nilsen 2012; Ruuhilehto and Vilppula 2000, 12-16). Organisational culture has three components: artefacts, expressed values, and fundamental assumptions (Schein 2004, 25). Waitinen

(2011, 208) defines school safety culture as a layered phenomenon in which everyone engages in their own activities. According to Lindfors and Somerkoski (2016, 6), the safety culture of an institution is an interactive activity in a learning environment aimed at promoting wellbeing and safety (Lindfors and Somerkoski 2016, 6).

RESEARCH METHODOLOGY
The primary data in this article has been obtained through interviews with vocational special needs education teachers, coordinator and personal care assistants at one of the Finland's biggest Vocational Special Collage.

The study was conducted as a qualitative interview study. The target group of the interview was employees of vocational special college. A total of 5 people were interviewed. The interview was chosen as the method of data collection because it is a flexible method and provides in-depth information (Hirsijärvi et al. 2009, 204-207 ; Eskola & Suorata. 2008; Ghauri & Grønhaug 2010). By its very nature, this interview was semi-structured, with open-ended questions. The interviews were recorded and transcript. The analysis of the material was guided by a completed model consisting of Waitinen's (2011) school safety and security aspects and other theory of safety management, safety culture, ASD and learning environment. The analysis looked for similarities that recur. The interviews were completely anonymous and the interviewer was an outsider. This way it was easier for the interviewee to trust and tell about a sensitive security and safety situations. As a result, more reliable data and, at the same time, deeper information was obtained, which allowed to get a more comprehensive picture of the safety and security phenomenon. Next in this article, we go through what kind school the interviewees work and how the interview was conducted. At the end of paragraph five, we go through the results of the interview.

Vocational College (special education institution)
Vocational College provides service for individuals who need special needs education, individual support and guidance in their studies and employment. There are many reasons for the need of support. These reasons are for example, health, learning difficulties, and social or psychological challenges. Most of the students are studying in order to get professional qualification certificate. However, some of them are studying and training for work and independent living. In Finland, these studies are called TELMA-studies and they are intended for students with a wider range of special needs. Usually these students have multiple diagnoses including ASD, mental disability and they have challenging behaviour. The individuals who were interviewed for this article were working with TELMA students.

Selection of the interviewees and Interview process
The selected school has about 1000 students and about 100 of them has diagnose for ASD. Many students whom have ASD diagnose have also other diagnoses. This leads to the need for a special support among the target students. The interviewees were selected among educational staff, who work with people with ASD and other diagnoses for example psychiatric diseases and mental handicap. In the selected school, the number of the target students was approx. 50 meaning sample classes of 5. One educational staff member from each of the 5 classes was asked for the interview. To cover a variety of views, people with a different work experience and educational background were selected for the interview. The work experience of the interviewees varied between 30 years and 1.5 years. Two of them were special needs teachers. One was coordinator and two were personal care assistants. This was the reason why five people were interviewed and why quantitative methods were not considered for this research.

Table 1 The selected Interviewees.

Interviewee	Job title	Duration of the interviewee (min)
Interviewee A	Special needs teacher	69 min
Interviewee B	Coordinator	45 min
Interviewee C	Special needs teacher	43 min
Interviewee D	Personal care assistant	36 min
Interviewee E	Personal care assistant	35 min

The interviews were conducted in two weeks and it took from 69 to 35 minutes for the interviewees to answer them as it can be seen from table 1. Every interview was first recorded and then transcript. Before the actual interview, interviewees read the questions and they asked if there was any terms that they did not understand. The questions were based on the literature study above. After transcription researcher searched for common issues that raised from the text. After the fifth interview saturation point was reached. When all the recordings were written down, the researcher went them through again and found similarities that can be found from most of the transcript documents. Next, the article will present the results.

RESULTS

The research focused on learning environments of special needs education. The learning environments were divided into three different parts according to Piispanen's (2008) doctoral dissertation: pedagogical, physical and psychological learning environment. Psychological learning environment is included into a social learning environment (Piispanen 2008). Interviews revealed that dangerous situations usually occur when people do not have good safety instructions, too many students are at the same time in a same place or too many employees are on a sick leave. The most common reasons for challenging behaviours are for example biting, hitting and running around. This may be due to students' sensory problems.

One special needs teacher described this best by saying '*A lot of people and a big crowd, lot of people comes in at the same time and a lot of people in the same corridor, both students and staff... If you are thinking about sensory problems, someone has very strong perfumes and loud voice or so, the loudness and stuttering, when somebody is coughing... It may annoy and then if you are in a tight space... It can cause many problems '*(Interviewee A).

The coordinator mentioned that: '*Well challenges... There have been challenges in the last couple of years... Maybe the inadequacy of the classrooms and maybe a bit of ambiguity or maybe the facilities has not been really good '*(Interviewee B). He also said that '*There is then just physical violence or threatening situations that affects both the staff and students'.*

When the researcher asked what challenges or hazards have you experienced or seen in the learning environments. The other special needs teacher said '*Perhaps the challenges or incidents are related to student behaviour, provoking others and when student's own self-control is lost unwanted situations can occur that will have affect to the personnel or the environment.'* (Interviewee C).

Both Personal care assistants also said that improper facilities are a big problem. Lack of training and instructions is a problematic and there are no individual studying facilities or they are not suitable for the purpose. Every interviewee mentioned that if the classroom has too many different kind of items not in order or for example, shelves are not attached to the wall and it may cause dangerous situations when students get nervous and are running around in a classroom. Students may also throw items towards other students or staff (Interviewee A,B,C,D and E.) All of the interviewees (Interviewee A,B,C,D and E) mentioned about violence one way or other, which is caused usually if routine breaks down or there is too much noise or people in a same place at the same time. That is the reason why it is important that students school day begins with a calm manner.

When Interviewees were asked about: 'What safety issues should be addressed if your students who have ASD diagnose are transferred to follow a normal curriculum?' Every interviewee stressed the importance of facility and what it is used for. Structure was considered important as well. (Interviewee A,B,C,D and E.) The importance of guidelines and individual needs of the students was a common theme in every interviews. (Interviewee A,B,C,D and E).

One teacher said:' *Well, people should pay attention to individual facilities. One should have place where to go and get a rid of stress when one needs to. In addition to that, you need to have smaller groups. There should not be too much noise, furniture and everything has to be selected in away, which makes it hard to rumble. The walls should not echo. Soundproofing is important. Some classes should have for example chairs and other furniture that cannot make noise. The biggest thing is the size of the teaching*

group and then you should have staff who have work experience with people who has ASD diagnose.' (Interviewee A).

The other teacher mentioned:' *Well, probably just that you should take into account the how the facilities are built. There should not be facilities that cause too many stimuli. The environment should be calm not too much people walking around. The actual place should be easy to walk around and there should be clear sings where everything is. Then one should plan advance how much special needs student needs support and guidance. People who work at school should have knowledge of the needs of the autism spectrum student.'* (Interviewee C).

The coordinator said that:' *Well, that's yeah of course it's the social side of the autism. The biggest challenge in general is their own behavioural structures, which is pretty hard to change and that makes it hard for them to follow a normal general curriculum. You should be able to be flexible, individualise true teaching, and also have strong clear structure for the autistic students. In other words, it is truly independent and (pause). How should say it. So, one could say if an autistic person learns to do something in a certain place then he or she may not be able to do the same thing in another place and if there is no clear structure that where something is done then it may rise some challenges. '* (Interviewee B). Table 2 will show what kind of challenges are most common according to these interviews.

Table 2 Most common challenges.

Job position	Challenges in Physical Learning Environment	Challenges in Mental/ Social Learning Environment	Challenges in Pedagogical Learning Environment
Vocational special teacher (Interviewee A)	Not enough individual studying facilities, or they are impropriate Sensory Abnormalities (noise, smell)	Violence (kicking, punching, throwing items)	Not enough time to plan. Not enough training and education.
Coordinator (Interviewee B)	Not enough individual studying facilities or they are impropriate.	Violence (Physical and Mental violence)	Not enough time for planning and no special facilities for it.
Vocational special teacher (Interviewee C)	Not enough individual studying facilities or they are impropriate. Sensory Abnormalities (noise).	Violence (Students throw items)	Planning. Materials.
Personal care assistant (Interviewee D)	Not enough individual studying facilities or they are impropriate.	Violence (need for self-defence instructions)	Poor planning and execution.
Personal care assistant (Interviewee E)	Not enough individual studying facilities or they are impropriate. Poor quality of air. Items are not locked inside of shelves.	Violence (students throws items)	Poor planning and execution. No good teaching materials.

There were also exceptions that were mentioned only once in these interviews. Interviewee B mentioned that there have been some thefts. It is easy for people who are not staff members to go in and steal. (Interviewee B and D). One interviewee mentioned that HR and management department should also be more careful when they hire new staff or let someone go. (Interviewee A).

From the organisational S&S perspective, most common challenges occur when personnel security and occupational safety are endangered. Every interviewee said that there should be good instructions what to do in a difficult and dangerous situations (A,B,C,D and E). This could raise a problem when for example there is a fire alarm on.

According to interviewees, the following things should be considered when one tries to reduce or avoid challenges by changing physical learning environment if special needs students are attending to the normal curriculum:

• Clear structure, what students and staff are doing every day? (Students with ASD do not usually want to differ from daily routines).

- Routine in using facilities. (People with ASD may get nervous if same kind of assignments are not done in a same place).
- There should be a place where student can go to calm down or study independently. (The lesson can continue normally in the classroom. Student who has difficulties to participate group lesson in that moment can still learn same subject individually.)
- Fewer furniture is better. (Then there is a smaller probability to stumble if someone decides to start running and fewer furniture may also create calmer atmosphere.)
- Furniture that makes less noise if they are changed from place to place or furniture that are too complicated to move around. (Less noise makes atmosphere calmer and if furniture cannot be shifted- they cannot be thrown at other students and staff.)
- Facilities should be built in a way that it takes into account sensory abnormalities. (Too much noise, light etc. may cause students to get nervous if they have sensory abnormalities.)

From organisational perspective, it is very important that there are enough competent employees, who have a good understanding of special needs education and ASD as well, as how to act in crisis or challenging situations that may lead to violence. A physical learning environment, which includes all the facilities and outdoor spots where the teaching takes place, has a big role in mitigating those risks.

RECOMMENDATIONS
From the results of these interviews and literature review, it can be said that the physical learning environment has an important role in safety and security for educational institutions. Most important is that the facilities have places or silent rooms where students can go to calm down or do the assignments individually without any disturbance. All facilities should be built in a way that they do not cause sensory overload, which includes smells, noise, too bright light etc. All materials should be impact resistant, especially windows. Every classroom should have meaning that usually do not change because it helps students who have ASD to structure their school day. Proposals for managing inclusive learning environment are as follows:

- Reducing the amount of loose items or locking them.
- Avoiding student contact with hard surfaces especially windows and use of protected glass.
- Time planning in a such a way, the students with ASD can come a bit later or sooner than rest of the students, in order to avoid noise and crowds.
- Flexible classroom design and corridors, in order to easily create silent and private spaces.
- Fixed class room setting in a sense, the students always enter the similar space.
- Dedicated spaces for dedicated tasks, keeping them always the same.
- Avoiding changes in general, whether it is time, space or pedagogical decisions. If they do occur giving, the students time to adjust and inform early and slowly.

Overall, the most important design principal is consistency. Whether its sensory consistency, such as colours, sounds or smells or pedagogical consistency, any kind of change will disrupt the everyday learning environment and thus the safety of the staff and the students.

CONLUSIONS
The world of education is currently in a state of transition. Special needs students are increasingly involved in regular curriculum. In the special educational institutions, challenges such as the too large study groups and inappropriate facilities have created challenges for the overall S&S of the learning environment. This is important to know, as the S&S needs of educational institutions will change with the inclusion. Based on the results of these studies, it can be said that the outlook of learning environment should be addressed. This can improve the safety and well-being of all students and educational staff in the changing field of education. The most effective and permanent ways to mitigate risks is to make the physical learning environment as safe as possible with a good planning and standardised use of facilities that takes into account sensory and perceptual problems.

This research gives an overview about what kind of things are important in the inclusive physical learning environment. The key results from the challenges of learning environment perspective are lack

of individual studying facilities and sensory abnormalities. One of the main reason for challenges in the physical learning environments is noise pollution. The main challenges in the mental/social learning environment seems to be linked to the violence and to the sensory abnormalities. From pedagogical learning environment perspective lack of study material and time for planning lesson are the main concerns.

One way these challenges can be avoided or reduced from the physical learning environment perspective are reducing the amount of loose items or locking them. The other is to avoid students to contact with hard surfaces especially windows and use protected glass. Third, is having a flexible classroom design and corridors in order to create silent and private spaces. Fixed classroom setting and dedicated spaces for dedicated tasks is a good way to create routines and ease stress because then the students can always enter to the familiar space. Avoiding changes in general, whether it is time, space or pedagogical decisions seems to make school day safer. If changes do occur, one may argue that by giving time to the students and staff will mitigate the risks and make the learning environment safer. More time helps staff to change the physical learning environment setting to be less stressful to and for students it gives a moment to understand what tasks are included to the school day agenda.

We suggest that more research should be made. The next approach could be arranging a workshop with architects, interior designers, S&S professionals, and educational experts. After the workshops, a more accurate design proposal could be made and its functionality could be tested.

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INTERVIEWS

Vocational special needs teacher interview 14.01.2020

Vocational special needs teacher interview 27.01.2020

Vocational special needs coordinator interview 16.01.2020

Vocational special needs personal care assistant interview 27.01.2020

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