

## **Is it possible to create a good working environment in an open plan office?**

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### **ABSTRACT**

Today many people are annoyed by the sound environment in open plan offices.(o.p.o.) I have asked people who works in o.p.o. - What is your opinion about the sound environment in your open plan office? I have not only asked which sounds they don't like, but also if there are some good sounds in the o.p.o. that facilitates their work and increases their comfort. The result is that the most annoying sound in o.p.o is people talking. And the sound that people appreciates most is people talking. Human voices in o.p.o. can be perceived as wanted sound (information) and unwanted sound (noise). There is an interesting connection between the distance to the talking person and how you experience the sound. The voice from a person, who sits close to the listener is often perceived as information, while the voice from a person who sits far away in the o.p.o. almost always is perceived as unwanted sound (noise.) In my lecture I will present five important considerations to have in mind to create a good working environment in open plan offices.

### **1. INTRODUCTION**

There are a lot of articles today about how bad the working environment is in open plan offices. Still many companies continue to build open plan office solutions.(o.p.o.s.) I have asked many company managers why they build o.p.o? The answers are that companies today are meeting a hard competition from the whole world, and if they are not first on the market with their product someone else is. To minimize their deliver times they create teams (project groups) containing persons with right competence so they can deliver the product to the market quickly. Project groups have to be very flexible and flexible organizations need flexible buildings. Open plan offices are flexible because companies can very easy move people and create new teams to fulfil the markets requirements. In cell-offices solutions the company have to create more rooms if they employee more personel, but with an open plan solution they can increase the density in the o.p.o. and create more workplaces. Other positive things with o.p.o.s. are that information is spread very quickly and that is good when new teams are put together to work. O.p.o.s. requires less space per working place and that saves money for the company. O.p.o.s. also shows openness to employees, clients and visitors. The office building is a tool for companies to express what they stand for. These are the reasons why managers chose o.p.o.s.

Sound in open offices can be perceived as information (wanted sound) or noise (unwanted sound). Many reports have investigated how annoyed we are and what kind of sounds that we find most annoying, but I wanted to investigate if there are some sounds in the o.p.o.s. that are good and helps us to do a better and more efficient job.

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## 2. METHOD

I have seminars for people who are working in open plan offices. The title of the seminar is: Is it possible to create a good working environment in an open plan office? In the beginning of the seminar I hand out a paper to all participants and then I ask following questions:

How do you perceive the sounds at your workplace?

How do you perceive the sounds at your workplace?



Cross in one box



All sounds are good50-50All sounds are noise

**Figure 1:** Questioner sheet (frontside)

They should put a cross in one of the boxes.

The first box (from the left) representing: 100% of all sounds are good. 0% is noise.



The last box representing: 100% of all sounds are noise. 0% is good.



The box in the middle representing: 50% is information and 50% is noise.

Then I ask the participants to turn the paper around and write down two things: Describe the sound that you appreciate most. And describe the sound that is most annoying.



What sound do you appreciate most?

\_\_\_\_\_



What sound is most annoying?

\_\_\_\_\_

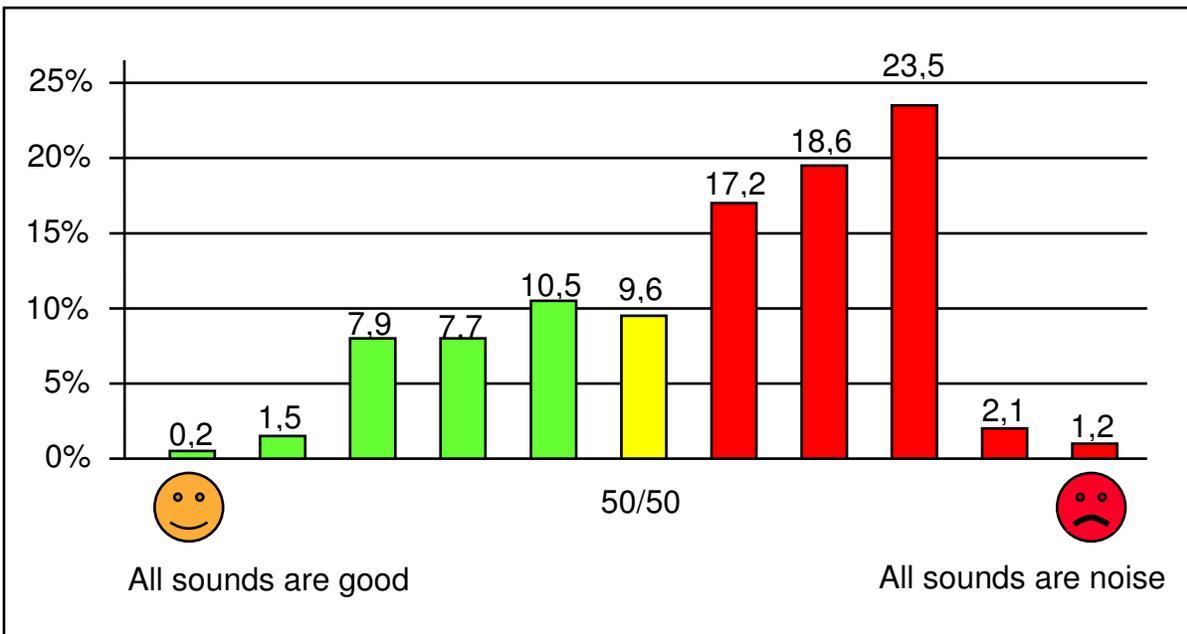
**Figure 2:** Questioner sheet (backside)

Then I collect all papers, that are anonymous, and then there is a discussion with the participators about the results.

### 3. RESULTS

Question 1: How do you perceive the sounds at your workplace?

A majority of people I have asked are negative to sounds in o.p.o.s, but not everybody. The seminars are ongoing and the result so far is as follows:



### Figure 3: Result

27,8% are positive. 9,6% think 50% is good and 50% is noise. 62,6% are negative to sounds in o.p.o.s.

Question 2: What sound do you appreciate most? What sound is most annoying?

The most appreciated sound is talking people, because it provides the listener with useful information.

The worst sound is talking people, because it disturbs the listener.

Here is a ranking list of the most wanted sounds:

1. Talking people.
2. Laughing people.
3. Music, from my own player.

The most annoying sounds are:

1. Talking people.
2. Telephone signals, from other person's phones.
3. Music, from other person's players.
4. Sounds from office machines i.e. copy machines/printers and coffee machines.
5. Sounds from h.v.a.c.
6. Sounds from traffic outside the building.

It is interesting that talking people is the most appreciated and the most annoying sound. During the discussions it was quite clear that people more often appreciate the "talking person" when the person was sitting close (up to appr. 4m) to the listener. But if the "talker" sits far away in the room (8-10m from the listener) the talk almost always is perceived as unwanted sound=noise.

## 4. DISCUSSION

Many company managers like the o.p.o.s. because it provides: good flexibility, good communication between people, less space per workplace and it shows openness.

Most people who work in o.p.o.s. are annoyed by sounds<sup>1</sup>.

The question is: Is it possible to create a good working environment in an open plan office?

I think it is, but we have to consider not only the sound environment, because the working environment is created by many different things. But if we concentrate on what we can do to optimize the sound environment in o.p.o.s. I suggest five things to take into consideration:

### **A. Inform:**

The decision makers who chose an o.p.o. for the organization should explain to the employees why they chose this solution. It is important to explain the advantages and the disadvantages with the o.p.o.s. The decision makers have to show that they are aware of the sound problems in o.p.o.s, and that they have done many things to minimize these problems.

### **B. Create the right teams:**

Put persons at the right place, create project groups. It is important to furnish so that persons who have an advantage of hearing each other in their work sits close. The members in the project groups changes often so the building has to be flexible.

### **C. Minimize the sound propagation - and measure it**

The voice from a person who sits close to you can often be perceived as information, but the voice from a person who sits far away is very often perceived as unwanted sound=noise.

Therefore it is important to minimize the sound propagation. "Good" screens and absorbing surfaces in the room reduces the sound propagation.

Reverberation time is often measured to describe the sound environment in o.p.o.s. But it is not so useful in practice because it measures the time it takes for the sound level to drop 60 dB, not

how sound propagates in the room. Draft ISO/CD 3382-3<sup>2</sup> uses parameters to describe the sound propagation in o.p.o. like  $DL_2$  and since people complain about long sound propagation it is better to measure this to be closer to reality and the human perception.

#### **D. Build "silent" rooms**

During a day at the office people work with different tasks. Some of them require communication and some concentration and privacy. If we don't want to be disturbed by the person who sits close, we need to reduce the sound level from the talking person with approximately 35 dB. (sound insulation) To achieve this in an o.p.o. the distance between the workplaces will be very long. This increases the area per workplace and is not appreciated by the managers. Therefore we need to build "silent rooms" in the o.p.o. This rooms should be placed so that people can see it from there workplace in the o.p.o. When a person is annoyed by some sound he/she can go to this "silent room" and continue the work without the disturbing sound. This requires technical solutions as portable phones, laptops and WLAN (Wireless Local Area Networks). In Sweden it is normal to have one silent room for ten workplaces.

#### **E. Educate the employees in "acoustic behaviour":**

People share the sound environment in the o.p.o. It is good to be aware of that a voice can be heard by many persons in an o.p.o. To reduce the annoyance it can be good to have some acoustic rules/advice to have in mind. If a person wants to talk to somebody who is 10m away it is not good to shout. This will probably annoy a lot of other persons in the o.p.o. The right way is to go to the person and talk at a short distance.

If you start to talk to a person and you feel that this conversation might be long, you should go to a quiet zone to continue the conversation so that you don't disturb other colleagues. The office therefore must have "quite" zones or rooms.

It is important that the "education" is perceived as positive because if people are afraid of talking to each other the feeling at the office will not be good.

Normal office work is a mix of communication and concentration. My investigation shows that the majority of the people who works in o.p.o.s. are annoyed by sound because the o.p.o. supports communication. Building silent room in the o.p.o. gives people the possibility to choose a workplace that supports their acoustic need; concentration or communication. The need of silent rooms depends on how annoyed people are by sounds, and minimizing the sound propagation reduces the annoyance and the amount of silent rooms.

### **REFERENCES**

1. Christina Danielsson, Office Environment, Health & Job Satisfaction, Licentiate Thesis in Technology and Health Stockholm, Sweden 2005
2. Draft ISO/CD 3382-3. Measurement of room acoustic parameters – Part 3: Open offices