**An internship at the Pomeranian Science and Technology Park**

**Internship research paper**

**Work submitted to**

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**Work submitted in**

**Social challenges and social changes**

**(h300301SA-03)**

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**2015-05-17**

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# Introduction

The purpose of this research paper is to see what makes the Pomeranian Science and Technology Park an innovative center. The research will be based upon the observation of 3 different departments, which are the biology department, social department, as well as the entrepreneurial department. The research methods that are used in this research paper are mostly observation, but also a large amount of information will be collected through questionnaires as well as interviews with the workers of each department.

# Pomeranian Science and Technology Park

## General information

The Pomeranian Science and Technology park find itself to be a quite interesting center, for it has only been open for a couple of years, and it already promotes itself as being a innovative center. However, one may ask himself what are the elements that makes this center so innovative. For starters, there is the simple fact that this center most of the time associates itself with students who had recently graduated from university and prove to be creative and innovative. The center will often then offer them the possibility of widening their knowledge in different fields, but in ways that it will advantage them as well. However, the center doesn’t only deal with students. It deals with big companies as well. The companies that are associated with the center have to meet certain requirements. In exchange, the center will give the resources and space to let them develop their ideas.

The requirements that need to be met by the companies are often them having to present an innovative project that they would like to see grow. Often, the domains in which these are done are also in growing domains, such as engineering, biotechnology, multimedia, environmental protection, design, etc. Another element that makes them a very modern center is that they offer these companies prototype areas, in which the companies’ can built their products from scratch. They also have 35 modern conference room equipped with the latest equipment, and in which are being lead many conferences and meetings. Finally, they have a department called *the experiment science center*. This center is quite interesting for they specials in 4 different fields, physics and optics being two of them. This is another element that makes this center so modern for they take it into their own hands the task to teach science to people of all ages in different fields, but simplified to the point to keep it fun and interesting.

# Biology department

## Vitro culture

*In vitro* (Latin for within the glass) refers to the technique of performing a given procedure in a controlled environment outside of a living organism. (The marshall Protocol Knowledge base, 2012, par.1) What is quite interesting about the vitro culture is that they create a favorable environment in which the pit moss and other plants (who are endangered species and not endangered species) can grow and multiply quicker than they would have in a natural habitat. Vital culture can be used for both experimental but also commercial reasons. Therefore, this has modernized both the experimental way of maintaining the endangered plants, but also on a commercial level.

### Experimental level

On an experimental level, the *in vitro culture* has modernized the way of growing plants because it is much more efficient than the old technique, which constitute of the typical growing them in a jar or also known as gardening. However, the old technique was a very big disadvantage for they would have to remove a portion of the plant from one environment, make it grow in a separate area in order to reintroduce it into another environment. Vitro culture is an innovation with the fact that researcher can now take a small part of the plant, such as the grains of the plant, grow it in a *in vitro* culture environment, and introduce the grown plant back into a new environment. This is innovative for we have introduced the same plant but into a new environment, without having to reduce the amount of plant that there was in the first environment.

Not only that, but on an experimental level, the experimenter gets to control the environment in which the plant grows. They will often be able to, therefore, create a ‘’heaven like’’ environment for the plant. It will also allow the experimenter to control the speed at which the plants grow. The experimenter often gives the plant all of the resources needed from the beginning, which allows the plant to grow much faster than it would have in its natural habitat. Finally, it has modernized the plant cultivation with the fact that the researchers can now modify the genetics of the plant. This means that the researchers can make the roots of the plant much larger than the original one. This technique is also often used in order to create new traits in the plant.

Finally, the in vitro cultivation is very useful also when it comes to the production of drugs and antibiotics that are plant based. Researchers can now use a small sample of the plant from its natural environment, make it grow in in vitro culture environment, and then multiple it to assure access to a large quantity of that plant. Then, the researchers can use small portions for drug testing, and have enough that if ever they make a mistake, they can simply start over. This allows the researcher to do more testing, and have a large enough quantity of that plant to try different methods of extraction on it. This allows for the augmentation of production of antibiotics based upon plants.

However, there have been some researches being done about a possible futurist new method of using *In vitro culture* for medical reasons. This new technique is called the 3D in vitro technology for medical application. The in vitro technology pretty much are going to be some tools that are ‘’simple, inexpensive, portable and robust that could be commercialized and used in various fields of biomedical sciences such as drug discovery, diagnostic tools, and therapeutic approaches in regenerative medicine.’’ (Hosseinkhani & Ou, 2014, par 1). The biggest purpose of this new technique would be to ‘’open many doors to significantly improve the quality of biological tools and lead identification as well as therapeutic approaches. Especially in the case of human cells, it may be of clinical relevance for future cell-based therapeutic applications.’’ This would be used not only for human purposes, but also for plant based researches as well: ‘’It will provide attractive combinational strategy of tissue engineering principles with materials engineering to accelerate and enhance tissue regeneration. ‘’ (Hosseinkhani & Ou, 2014, par 3)

### Commercial level

On a commercial level, the vitro culture is often used in order to produce a large amount of plants in a very short time. Creating a perfect environment for a plant to grow assures that the plants will grow quickly and in the amount that the producer wishes to have them in. However, the researchers also have the possibility of adapting the amount of hormones injected into the medium, or which hormones are put in. This will allow the modification of the plant traits or simply the gaining of knowledge in which environment different plants grow best. In other words, in vitro culture is the most useful when it comes to a commercial level for the quick production of plants and introduction to new traits to the plants. This is an innovation, for those who used the gardening techniques could not do this.

## Internships

The research biology department offers the opportunity to university students who have just received a master’s degree to come work for them for an average of 6 months. Although most workers are independent and are not assisted by a supervisor, there is the possibility of having an unpaid internship, in which a supervisor assists us. Often universities do not have the time or resources to take in people for internship. This therefore makes the center an innovation as well, for they allow through internship the development of knowledge students have about biology, as well as given them the opportunity of doing on hand work. This also allows the students to judge on wither they would like to work in that field based upon their experience of actually having worked in that field. Researches have shown that students who have worked in virtual laboratories showed significantly higher grades at the end of the semesters compared to their colleagues who did not use the virtual laboratory. (Swan, 2009, p.417) If we are able to find such findings simply based upon the usage of a virtual laboratory, imagine how working in an actual laboratory would allow a student to grow its knowledge in the field and develop a liking for this field.

##  Education

One of the biggest problems a lot of scientific trainers find themselves with is not having a specific location to lead some laboratory training or security training that is similar to one that people could find themselves in once they start working in that field. Having spoken to one of the researchers, she informed me that some of the trainings are even carried out in hotel conference rooms, for there was no other location where they could do it. Most universities have been receiving some financing for the European union and therefore cannot rent their labs to trainings or accept money from other companies in order to use their labs.

The *Pomeranian Science and technology center* therefore comes in handy for they have laboratorial rooms that have equipment that can be found in almost any other labs. It also creates a safer and more sterile place to be working with things such as bacteria’s. You are also creating a more similar environment to the one that these trainees would find themselves if ever they start working in this domain.

## DNA identification

On April 20th, in the biology department, I was presented with a new method used by researchers when doing DNA identification. This new method consists of the bead method. The old method constituted of the researcher created every solution in which its plant sample will be dipped in. The bead method is quite an innovation for it has created a universal standard to when it comes to DNA identification. The producers export the same solutions to all researchers, which allows for a more common knowledge share to be done among nations and allow universal equality. The bead method also show some traces of globalization with the fact that the kit used is only produced by one company, and forces researchers all across the world to use the same solution.

## Plantform

Althought the *in vitro culture* has been one of the most innovative techniques used in the last years, there is a new technique that is on the rise. The plantform is one of the most recent techniques that has only been around of a couple of years. The plantform is so recent, that there has only been one scientific article posted on it.  It is only being presently tested. However, this technique can be considered an innovative one because its automatic and controlled by a computer. Therefore, this allows for the removal of the possible mistakes that could be made by humans. This also allows for everyone to have more universal results, for the technique used would be the same by everyone. The only research paper that has ever been posted on the plantform is called: ‘’Evaluation of a new vessel system based on temporary immersion system for micropropagation’’. What makes this study differ was that a multitude of studies have tried something similar before but have failed for many reasons. The reasons they have failed were because ‘’these bioreators [were] either too small or too heavy to handle with small interior bottom which often leads to disorders of cultures due to high density.” The plantform is however, better on the level were it “as a realtive greater interior bottom for cultures to grow and a suitable size for handlings. Besides, such bioreactors could be placed above each other for saving culturing space, which is more attractive for large scale production.” (Welander, 2014, p.227)

## Notes

One point that I have noticed where there was a lack of innovation in both the biology department and the social innovation department was their way of taking notes. Both of these departments kept their notes on paper and in bidders that could be found in their offices. This is a lack of innovation for this technique has been used for centuries and by many generations. It also has a lack of efficiency, for when having to refer or search for previously used documents, the task must be done by hand. The use of technological advances such as computers could help them make their work much more efficient and accessible to all the workers. However, the biology department does have their laboratory norms up on their computer, which can be only accessed by workers, which is a innovation. This allows for shared norms to be done among workers, making it accessible to a multitude of people at the same time.

# Entrepreneurial department

## Wolves summit

Another aspect of the entrepreneurial department that brings one to see how modern this center is their association with the wolves’ summit event. The wolves’ summit is one of the largest conferences that take place in Europe. This conference is organized for students and people who are interested in hearing CEO’s from different departments talk about how they started their own business. The CEO’s have also shared some of their compagnies biggest secrets. This conference also allowed the students to develop a number of skills in the social media field, with the possibility of gaining free entrance to the event in exchange of publishing different publicities on the media about the conference.

Being associated with such an organization is considered to be a modern element for this center. It is considered a modern element because you are creating relationship for your students with entrepreneurs all across the world. You are giving them the resources to know also how to organize the events in which you would have representatives from all across the world. Another reason why its considered modern would be because they bring speakers from different cultural backgrounds, which allows them to give a different perspective on the entrepreneurial department.

## Coworking

Coworking is the area in which individuals with fresh new innovative ideas can find a nest in order to see their projects grow. The area in which these individuals can work in includes a space larger than 400 square meters, access to computers, to printers, to desks, an office chair, cabinet space, etc. In other words, anything a person would need in order to feel comfortable and at home. However, that is not all it includes. It also includes a space, mostly composed of chairs and sofa, in which the innovative person could meet with clients, expands it’s networking or simply meet professionals in the field. Speaking of professionals in the field, the other members who work there are all professionals in different field, that all relate to entrepreneurial, and are all there to answer the questions and needs of these individuals.

 However, the question remains, how is this innovative? The idea of simply choosing the individuals to who you rent the space makes it itself more innovative. All people who would like to rent a space need to fill out an application, which includes their innovative project, and how they will carry that project out. In other words, they are making it more accessible for students to find a peaceful, but at the same time a location for a low rate, in which they can carry out their innovative project. The coworking section, however, promotes entrepreneurs in the most futuristic fields, such as ICT, automatic, robotics, biotechnology, environment protection and creative ideas, comprising design, multimedia, architecture, publishing industry. (PPNT, par 1)

## Student workshops

Student workshop is another interesting layer of the entrepreneurial department. Students who have been chosen to participate in this workshop had to fill out an application and pass some tests, which would evaluate their strengths and weaknesses. The students that have been chosen then were placed into teams of 7-8, based on their studies and field of interests. The students then had to come up with an idea of a project they would like to realize as a team. The student workshops are pretty much individual meetings with a professional in the field, which will supervise the development of their project. The supervisor also points out the important elements that the team should pay close attention to, as well as given them hints on what they should prepare or look up for the next meeting. The students also often get some free time to talk amongst themselves and decide what elements they would like to keep the same, what elements they would like to change, and what elements they would like to add.

This is an innovation for it is the first that it’s the students that are taking the lead, and not the teacher. The students are the ones that came up with the idea, and are the ones that will always have the final say on their own project. The supervisor is only there to recommend certain changes and make sure that everyone is on the same track. Not only that, but it is also an innovation because of the project itself that the students are coming up with. The projects are all so individualistic and different from one another, but all so creative and well thought. Furthermore, most of the projects are brought up in hope of helping other students. In other words, the workshops are also innovative for it’s the students who are coming up with solutions to problems that other students are having.

A recent study has been carried out by the Developing and assessing Students’ Entrepreneurial Skills and Mind-Sets. They brought up five interesting ways they helped students combine their entrepreneurial skills with their specialized field skills. The first thing they do is give a lot of problem based solution classes because those teach students the skills they wouldn’t have learned in other classes. They also try to promote a lot of teamwork, leadership as well as entrepreneurial skills. (Bilén &Kisenwether & Rzasa & Wise, 2005, p.234) My observation has allowed me to notice that the PPNT does not offer such classes to their students, and could be quite interesting, in order to help their students develop the necessary skills they need to start their own bussiness.

The second element that they offer their students are competitition at the end of each semester. (Bilén &Kisenwether & Rzasa & Wise, 2005, p.235) The PPNT could consider doing such a thing in order to help their students feel more motivated to work upon their projects, as well as see what kind of ideas other teams came up with. The third element that they brought up in this article was the fact that this school obligates their student to attend atleast 2 events related to enpreneuraiat. These events aren’t considered to be seminars, but more interesting activities which involve the students actively. (Bilén &Kisenwether & Rzasa & Wise, 2005, p.236) Althought the PPNT does offer such service to their students as well, they do not make them obligatory, which results in many students not attending any of them.

The fourth element that this school offers their student is the possibility of receiving a grat to help with their protocoles. (Bilén &Kisenwether & Rzasa & Wise, 2005, p. 237). The PPNT does something quite similar, where they would take into consideration the procoles done by the students after 6 months and would decide weither they wanted to give the stuents funds to help them further develop their project. The final element that they offered their student was a class called ‘’Market poll technology transfer’’ class. This class was given by by the bussiness and the engineer teachers who co-taught this class, with an undergrad team of engineers, bussiness and pre-med students. (Bilén &Kisenwether & Rzasa & Wise, 2005, p.237). This is another interesting class where they come to combine two different fields together, and should be something the PPNT consideres doing in the near future.

## Student’s Wednesday

 Once a month, the entrepreneurial department has an organized activity where they bring a guest speaker for the students which presents a different aspect of business every time. This time, they brought in a guest speaker that came to talk to the students about the fact that business can be started at any age. However, what made this session differ a bit from the other ones was that they had asked me as a foreign student to present different ways that Canadian student starts their own business. I therefore decided to present more the financial aspect of it, for I felt it was the one that students struggle the most with when starting their own businesses.

 The fact that they were taking advantage of having a foreign student to do a presentation on business is an advantage in a couple of ways. First of all, they are asking a foreign student to present their ways of starting a business, and each country has their own different techniques and organization. This is important for if a student choses to leave his country; he will have the basic knowledge of different organizations and will know the requirements to be able to apply for these grants and so on. The students will also be able to take the strongest points of foreign businesses and apply it to their own situation. This can make their company therefore seem more innovative to their countries population, which can make their business much stronger also than others.

# Social innovation department

## The population’s budget

One of the elements that I thought made this center much more modern was the implication of the population in the decision taken by the center. The population’s budget is when the population gives their opinion on what should be changed in their city. How this works is that the government declares the amount of money they are ready to invest into each city. The citizens then can come cup with ideas, such as asking to build a park for the children in a specific area. The citizen then picks up a form sheet. This sheet must contain their name address and reasons why they wish to see the government invest into their ideas. The person must also attach a sheet, which contains a minimum of 25 signatures, all of people who agree with the person’s idea. They bring it into the center and leave it at the secretariat. The citizens can attach pictures or drawing to assure a better understanding of their ideas. The next step is done by the center. The center will try to determine the cost and time necessary to see this idea be realized.

I find this to be a modern concept for it allows the involvement of the population into where the government should be investing in the cities. It gives the citizens the chance to feel as if they are changing something in people’s lives. In addition, it allows the population to give their opinion on certain matters. This center has also allowed the communication amongst the population and the government to be facilitated.

## Stress relief

The *wyminnikowni* is a sub section of the social department at the Pomeranian science and technology center. This center is open every day after a certain hour and is open to people of all ages, but is mostly for students from the ages of 10 and 16. What makes this section of the center an innovative one is that it’s a group of student that has a final say on all projects presented. The schedules, events and activities are often proposed by students, for they are the ones who have the most inside sight of what students look for in a youth center. Also, what I thought was quite innovative is that they host different events based on where the youth are in their lives. For example, when the high school student were going into their exam session, they would bring in guest speaker to give them some tricks on how to deal with their stress. This is innovative because the activities last sometimes up to four hours, which gives the guest speaker the chance of giving the students a large amount of tricks from which they can chose from.

Having done some researches online in order to find some studies made about youth centers, I have come across a quite interesting one where they presented some case studies about youth centers in the United States. These case studies are very interesting because share the same ending of their organization. The reason why the Youth Activists Network and the What’s Up Lawrence initiative both failed was because of the lack of adults who were available often in the organization: ‘’ The implementation of participatory projects with young people required teams of dedicated adults to facilitate face-to-face discussions, establish connections with local organizations and accompany the young activists in excursions around the neighborhood. Unfortunately, most community organizations are not empowered enough to sustain such a level of commitment.’’ (Burd, p.100) This is something that the PPNT have that allows it youth center to continue is the fact that they have adults who were hired to be available full time in order to fulfill the students needs. This is one of the elements that have made two youth centers failed, but may allow this youth center to continue for a couple of years.

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# Conclusion

This research paper has allowed one to see that there are about 12 elements that make this center an innovative one, and 1 that proves that it is not an innovative one. The biology department itself has 6 innovative ones, which are the *in vitro culture*, which splits into two sub-categories, which are the experimental and commercial, the internships, the education, DNA identification as well as the plantform method. For the entrepreneurial department, the elements that made it innovative were the Wolf summit, the coworking, student workshops as well as the student’s Wednesday’s. Finally, for the social department, the two elements that made innovate where the population’s budget, as well as the youth center. Most of these methods were considered innovative ones because they presented a new method of completing some tasks.

However, it finds itself to have one element that isn’t quite as innovative as the other ones, and that would be their method to take notes. That would be however, explained by the fact that they are using the technology they have access to and prefer to use a more classical method.

If there is one thing that I will never forget that the entrepreneurial department taught its student is that its important to find one core value that would make me stand out when starting your own business. They made theirs the innovation one, and based on this research paper, one could that they weren’t lying about that part.

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