

# The Intercultural Challenges of Engineering Education in a Greenlandic Context

Kåre Hendriksen & Hans Peter Christensen

*Greenland is a modern society with Self Governance, but only half a century ago it was primarily a fishing and hunting society governed as a colony by a Danish elite. The rapid changes have left Greenland with many social problems, and compared to Western Europe relatively few finish education beyond public school.*

*Since 2001 the Technical University of Denmark has offered a study program in Arctic Engineering primarily targeted at Greenlandic youth, but also students from, for example, Denmark, where the first three semesters are finished in Greenland. There are two main objectives for this program: to educate professionals with a deep understanding of the Arctic, and to give the Greenlandic youth a better chance of getting a higher education. To align the teaching philosophy with the Greenlandic students' cultural background, the curriculum structure has large interdisciplinary courses based on authentic local cases and intercultural group work.*

*This paper will focus on the challenges caused by many of the Greenlandic students' weak academic preparation, and the fact that the cultural background embedded in the Greenlandic language can make it very difficult to comprehend topics at an abstract level. Additionally, the group work and the class teaching are challenging due to the culturally-based reticence and conflict-averse nature of many of the Greenlandic students, which gives the Danish students a dominant position. This often creates a negative spiral, where many Greenlandic students tend to withdraw from discussions, which are an important part of the education. The paper will discuss our experiences with handling these challenges.*

## Background

Up until World War II, the Danish Greenland administration tried to keep Greenland a closed country out of a desire that the Greenlandic population, unlike a number of other Indigenous groups, should have a calm and gradual transition from a nomadic fishing and hunting society to a more modern society. Additionally, a major contributory factor was a desire to reduce the Danish costs of operating a colony (Bang 1940; Grønlandskommissionen 1950; Lidegaard 1961; Hendriksen 2013).

Through the colonial period from the mid 18th century, the Danish administration prioritized education of Inuit children at all permanent settlements. In most places, the teaching was handled by Greenland 'catechists' with limited educations, who also served as priests. In that respect the Greenlandic children were roughly equal to Danish children in most rural areas, except that the curriculum in both cases was decided upon by Danish authorities (Lidegaard

1993). Unlike the teaching offered by other colonial powers across the world (insofar as they offered any teaching at all), the teaching offered by the Danish administration in Greenland was given in Greenlandic.

During World War II, Greenland was practically cut off from Denmark, while the United States ensured Greenland the necessary supplies and defense against the German occupation that had already befallen Denmark (Grønlandskommissionen 1950; Heinrich 2010). Simultaneously, Greenland functioned as a very important link for the U.S. airlift to Europe, which is why the U.S. established several air bases and military stations in the country, creating a significant interaction between the population of Greenland and the American soldiers.

The end of the war marked a turning point in the Danish attitude towards Greenland, and in the following decades a relatively well-planned and very rapid modernization of Greenland took place, where Greenland's status as colony changed to in theory become a more equal part of Denmark. In order to enable modernization, the Danish administration sought to gather the people in fewer and permanent settlements (Grønlandskommissionen 1950; Boserup 1953; Grønlandsudvalget 1964). The motive was partly to ensure better housing and health conditions for the population, which was a major challenge, as many still lived in sod houses and tuberculosis was widespread and claimed many lives. Another important motive was to gather the people at the best fishing places, where the fish processing plants were built, with the intention that Greenland should be financially self-sustaining primarily through fishing (Grønlandskommissionen 1950; Grønlandsudvalget 1964). At the same time massive investments were made in the development of the education system, and in the absence of Greenlanders with extensive formal schooling, Danish teachers were imported en masse. Likewise, it was primarily Danish craftsmen who were responsible for construction and the establishment of infrastructure and Danish health care professionals who staffed hospitals and the smaller settlements' nursing stations.

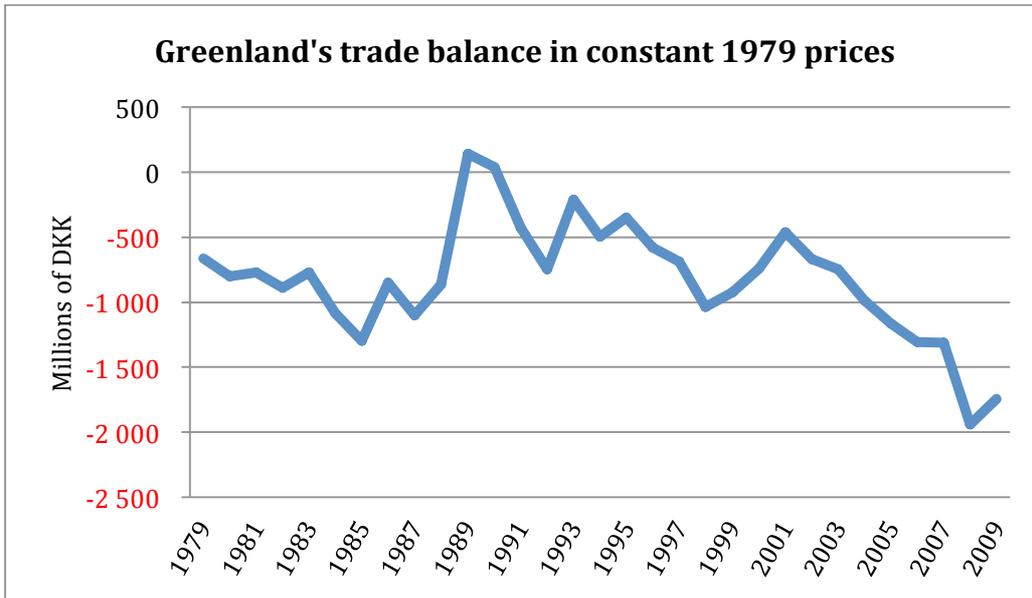
Greenland experienced increased prosperity and population numbers were doubled within a generation, while the number of permanent settlements was halved (Hendriksen 2013). But many Greenlanders also noticed that they were effectively left out, and were spectators to the development completed by Danes, a development many felt was on Danish terms. Many found it hard to adapt to the new conditions in which life and work were put on 'form' and schedule, and which did not take into account the weather and/or seasonal opportunities for hunting and fishing. In addition to this, new access to beer and liquor meant that many, out of frustration, turned to massive abuse of alcohol (Dahl 2000).

The post-war years changed Greenland for better or worse. Centralization and the fact that changes were implemented by the Danes on Danish terms created a resistance to 'the Danish' in large parts of the population. A political and national consciousness emerged that led to the introduction of Home Rule in 1979 with a democratically elected parliament that assumed responsibility for most of the internal affairs (Bro 1993)<sup>1</sup>.

### *A Dependent Economy*

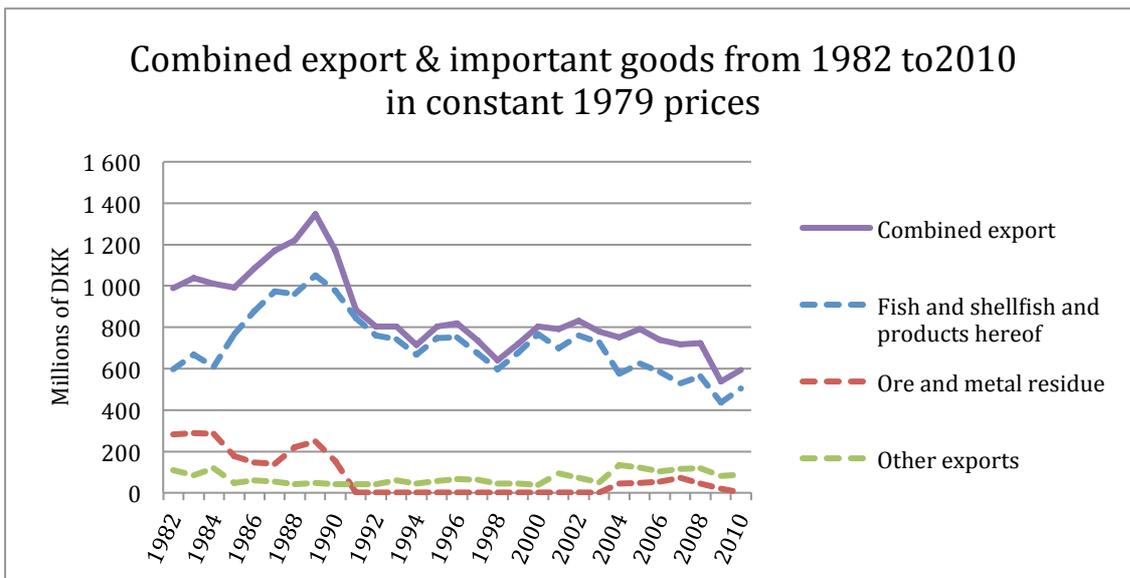
In the decade following the introduction of Home Rule, focus was put on 'Greenlandization' and decentralization, while Greenlandic was promoted as the main administrative and educational language. However, from the late 1980s on, cod disappeared from Greenland waters

and thus an essential part of the Home Rule economic foundation, and since then a massive and gradually increasing loss on the Greenlandic trade balance has been recorded (Figure 1).



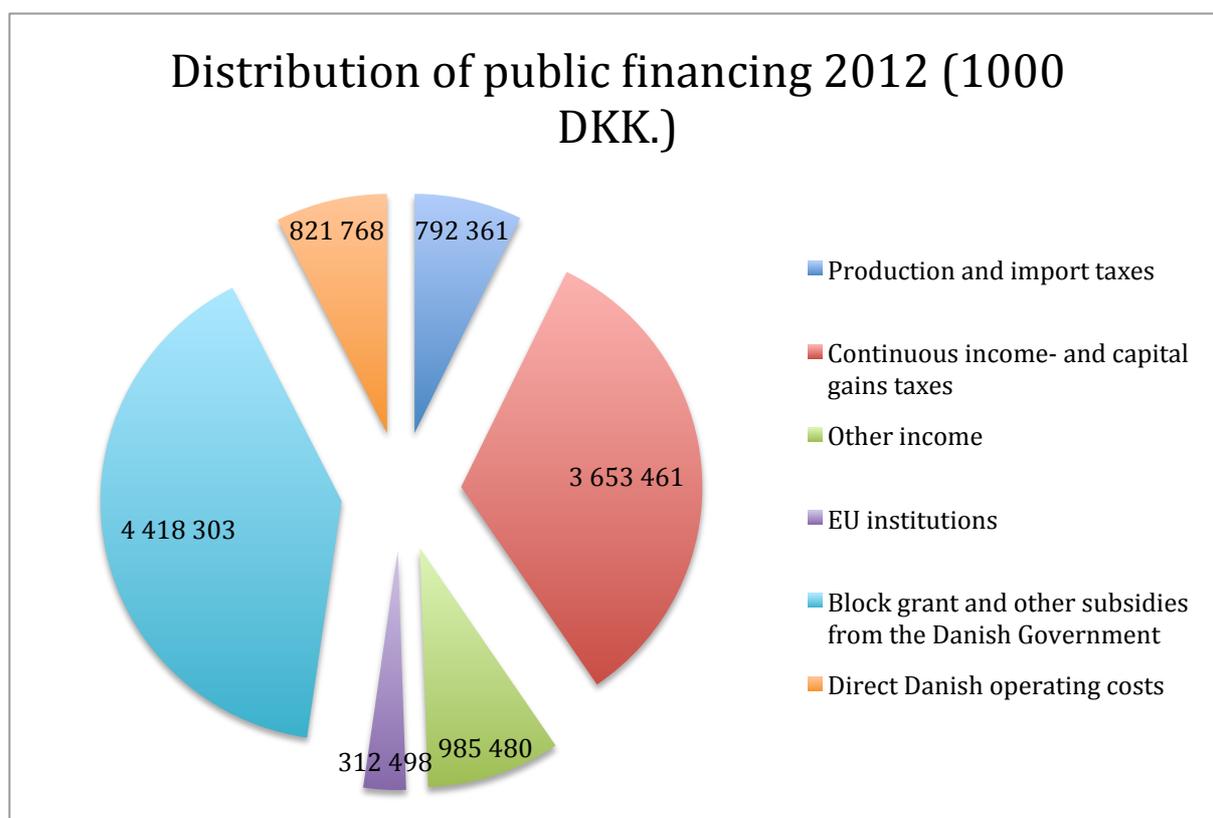
**Figure 1:** Greenland's trade at constant 1979 prices from 1979 to 2009. As can be seen, Greenland has had a significant trade deficit throughout the home rule period, except in 1989 and 1990 when there was a very modest surplus. (Based on Statistics Greenland data date).

Slowly, societal developments returned back towards increased geographical and economic centralization, and today's population of just over 56,000 inhabitants are distributed between 17 small 'cities' and 58 villages. The geographic and economic centralization has not reduced Greenland's almost mono-product economic dependence on exports of fish and seafood (Figure 2), and the value of exports has been gradually decreasing while imports have been increasing. The overall development has meant that many of the cities and villages are now left without any real business or livelihood besides maintaining the settlement's operation (Hendriksen 2013).



**Figure 2:** Key export product groups from 1982-2010 at constant 1979 prices. The only significant exports for the period, in addition to seafood, are lead and zinc ore from the Maarmorilik mine, which closed in 1990.

The large imbalance between exports and imports has prohibited the creation of a self-sustaining economy in Greenland, and left Denmark funding half of the public spending through transfer payments (Figure 3).



**Figure 3:** Distribution of the main sources of funding for the public economy of Greenland, which includes self-government, municipal and state government spending for 2012. As shown, Denmark, and to a lesser extent the EU, finances half of public spending. (Source Statistics Greenland date)

### *A Bilingual Society*

The Greenlandic language is far from the Indo-European family of languages and has a fundamentally different structure and organization. It is a language developed by and for a hunting culture. It is particularly suitable for oral communication in relation to the daily life unfolding in a hunting society whereas the practical and topical focus seemingly makes it more difficult to discuss some abstractions e.g. relating to engineering. There is no original written language, and it was Europeans who introduced today's written Greenlandic (Olsen 2004; Lidegaard 1993).

Linguistic developments are constantly going on in which a number of foreign words are partly incorporated, but equally, a number of new Greenlandic words are created in order to describe modern things or situations. Despite this, it remains a technical challenge to translate Danish administrative, academic, legal or technical texts to Greenlandic, and these translations are often difficult to understand for the Greenlandic population. Sometimes different translations of the same texts provide such diverse results that they offer possibilities of quite different interpretations.<sup>2</sup>

Despite repeated attempts to use more Greenlandic as the teaching and administrative language, Greenland has remained a bilingual society with Danish often being prioritized in the administration. Since modernization took off, there has been a significant workforce 'called' foreign, primarily Danish, in the country, which peaked as late as 1988 with more than 9,500 foreign workers including their families out of a total population at the time of 54,500.<sup>3</sup> Much of the foreign labor only stayed in Greenland for a few years, and very few of those who have lived in Greenland for a longer period of time or even most of their lives, have learned Greenlandic. For these people, language has not posed a major problem, since the primary administrative language, as well as the business language, historically has been Danish, and this has only modestly changed in spite of first the Home Rule and then the Self Rule.

It may be difficult to differentiate between those called Greenlanders and those called Danes. The distinction is officially based on the individual's place of birth. This means that children of Danish parents born in Greenland are registered as Greenlanders, while Greenlandic children born in Denmark are registered as Danes. Furthermore, many children are born into families where one parent is Greenlandic and one Danish. Despite this, the statistics offer a reasonable picture.

The fact that Danish has been retained as the main language among officials and decision-makers is also due to the fact that imported laborers and professionals generally have the highest credentials, and thus fill a number of key positions in society, even though their numbers, including families, are down to around 6,000 out of a total population of 56,000. Whereas more than half of the non-Greenland-born population including children and pensioners have a vocational or higher education, this is only true for less than one fifth of the Greenland-born population. If we look at the number of people with a master's degree or higher, in 2012 there were 714 Danish/foreign against only 279 Greenlanders (Statistics Greenland 2014).

Most Greenlanders with a vocational or higher education are in reality more or less bilingual with Greenlandic and Danish, and many are fully bilingual – especially those with a higher education, but within this group of Greenlanders, there is also some who for different reasons do not speak Greenlandic at all. However, a very large part of the population of Greenland masters the Danish language only at a conversational or basic level, and many not at all.

This means that Greenland is a bilingual society in the sense that a very large proportion of all public information is interpreted respectively into Greenlandic and Danish, and that the press operates in dual languages, with articles being translated. However, although a relatively large group can speak both languages, Greenland is also bilingual in the sense that there are two major populations, some of whom cannot directly communicate with each other. Given this, it is remarkable that the de facto administrative and legal language is that of the minority – Danish.

### *An Unequal Society*

In recent decades, the economic and social inequality in Greenland has increased markedly and Greenland has gradually developed an inequality higher than the U.S., UK and Italy, as measured by the GINI coefficient (Jensen 2008).

The social challenges are many, and a large proportion of the population feels more or less marginalized, while some live in poverty. With these social problems follow personal problems,

with many related to alcohol and drug abuse, although total alcohol consumption has been falling and is now below the Danish level. A frighteningly high number of girls and young women – and also boys and young men – have been subjected to sexual abuse and the number of abortions is very high. Greenland also has a very high suicide rate, with some districts' rates among the highest in the world (Bjerregaard 2004; Bjerregaard et. al. 2008; Bjerregaard & Aidt 2010). There is no immediately clear geographical pattern or pattern relative to the size of the settlement, and the social and personal problems are found everywhere. For instance, the social transfer costs<sup>4</sup> per capita in the country's capital Nuuk corresponds with the national average (Hendriksen 2013).

### *Education – Quality and Level*

Over the past decades, Greenlandic has been prioritized as the main language in the public (K-10) school system, while Danish has become the first foreign language. It has obviously strengthened the young people's Greenlandic skills, although some still find it difficult to read and write Greenlandic. It has also made them vulnerable in terms of societal communication and in particular in relation to further education, as already in secondary schools they are met primarily by Danish teachers, and most of the teaching is conducted in Danish. It is also very demanding as they have to learn English as a third language.

The social and personal challenges faced by many in the wake of modernism and in the continuing unequal context obviously has a bearing on the level of education, as does the challenge of learning in a foreign system and often in a second language. And in practice, this dual challenge means that a large group of parents also have barriers to supporting their children's education.

The combination of the language challenge and the social and human challenges mean there is limited social mobility in the community and it is noteworthy that social mobility in major communities ('towns') is modest, while the social mobility is more prevalent among young people from the smaller towns and villages (Hendriksen 2012; Hendriksen 2013).

The limited mobility means that the gap between the communities is maintained or even deepened both in economic terms and in relation to mutual understanding and frame of reference. The result is that the societal gap tends to be deepened and it becomes harder for the elite, consisting of the strongly bilingual Greenlanders and the educated immigrants, mainly Danish, to understand the living conditions and thus the frame of reference for much of the population. Conversely, it can be said that the Greenlandic-speaking majority has a harder time understanding the elite's frame of reference. Thus, the understanding and communication gap is maintained and extended.

### **The Study Program in Arctic Engineering**

There is a great need to train more Greenlandic people at all levels. Experiences with sending Greenlandic youth to Denmark to receive a higher education have never been particularly good, because dropout rates are relatively high. Furthermore, there are quite a few who choose to remain in Denmark after graduation (Chemnitz 2005). At the same time, there is a great need and demand for engineers who have a solid understanding of the challenges that the Arctic climate causes, and the particular challenges to the Greenlandic society.

In an effort to meet this dual demand the Technical University of Denmark (DTU) established the Arctic Technology Centre – colloquially called ARTEK – in 2001 in cooperation with the Greenland Home Rule (now Self Rule). The primary goal of the establishment of ARTEK was to establish an Arctic engineering education rooted in Greenland, while the center also serves as a coordinating framework for research in Arctic engineering.

It was decided that the program's first three semesters would be taught in Greenland, to give the Greenlandic students a chance to acclimatize to the academic world, while ensuring an Arctic profile and anchoring of the program. Recognizing that it would be difficult to ensure the necessary academic level if the entire program was carried out in Greenland due to the expense of providing qualified instructors and necessary experimental equipment, the remaining part of the program, except a one-semester internship in the Arctic, is located at the Copenhagen campus of Technical University of Denmark (DTU).

This is a Bachelor of Engineering program, which in Denmark usually takes three and a half years. It is basically a civil engineering education, but to give the necessary time and space for an Arctic dimension and to differentiate it from other civil engineering programs, the Arctic engineering program is extended by six months. The Arctic students have studied a semester more than the students they are going to study with, when they move to Denmark. This gives the students whose first language is Greenlandic a better basis for studying in Denmark.

The students have the opportunity to specialize in the following areas: Buildings (building design and load bearing structures), Facilities (indoor air quality, building energy and HVAC), Construction (rocks, permafrost and raw materials), Environment (water, sewage, waste and environmental impact assessment), and Planning (infrastructure, local and regional planning).

To exploit workshop facilities and synergy in educational cooperation the Arctic engineering program and thus ARTEK, was placed physically at Sanaartornermik Ilinniartfik (now Teknikimik Ilinniartfik - KTI) in Sisimiut, which in addition to the vocational school also includes a high school. Sisimiut is Greenland's second largest city with approximately 5,500 inhabitants. The Arctic engineering program accepts 20-24 students per year, of which approximately two-thirds comes from Greenland, while the remainder are primarily Danish. The language of instruction is Danish, as is the case for much of the higher education in Greenland. To ensure the necessary professional expertise in teaching, teachers from DTU and consultancy companies in Denmark, other universities, and from Greenland consultancies and municipalities, are used continuously. In total about 30 teachers account for the three semesters, that is organized with a few major interdisciplinary courses that are run consecutively (Christensen 2008). Teaching at DTU in Denmark usually is run with parallel courses throughout the semester.

The model, where the students are starting with three semesters in Sisimiut then moving to Denmark, combined with the fact that the education in Greenland relies on external instructors, has proven to be an academic success because on the one hand it guarantees a local foundation and on the other hand it has great resources to draw upon to guarantee the quality of the education. The Self Rule calls it the 'ARTEK model' and recommends it to other institutions of higher education in Greenland (Naalakkersuisut Uddannelsesplan II 2014).

Despite several initiatives over the last 5 years to increase retention rates (Christensen 2014), it has not been possible to achieve a high retention rate for the Greenlandic students. The rate is at

the same level as that of the Greenlandic students in other long- and medium-long higher education programs in Greenland and Denmark, which according to Statistics Greenland (2014) can be estimated between 40 and 50%.

That the initiatives have not led to higher retention rates may be due in part to the fact that the past five years have produced a two- or three-fold increase in the enrollment in Arctic Technology, with an increasing proportion of Danish students. It is good to have a few Danish students in a class, but if there are too many then they may completely dominate classes, and the Greenlandic students will fall back.

The decision to start the program in Greenland has also had an unintended effect: many with weak prerequisites are applying, because they cannot get into other programs and are accepted by ARTEK. And many, who do not really know what they want, choose Arctic Technology because the program starts in Greenland. At the same time, some of the most driven and best qualified young Greenlandic candidates who want to learn engineering have the confidence to choose another engineering degree. There are just as many young Greenlanders who take an engineering degree outside of Greenland as at ARTEK (Statistics Greenland 2014).

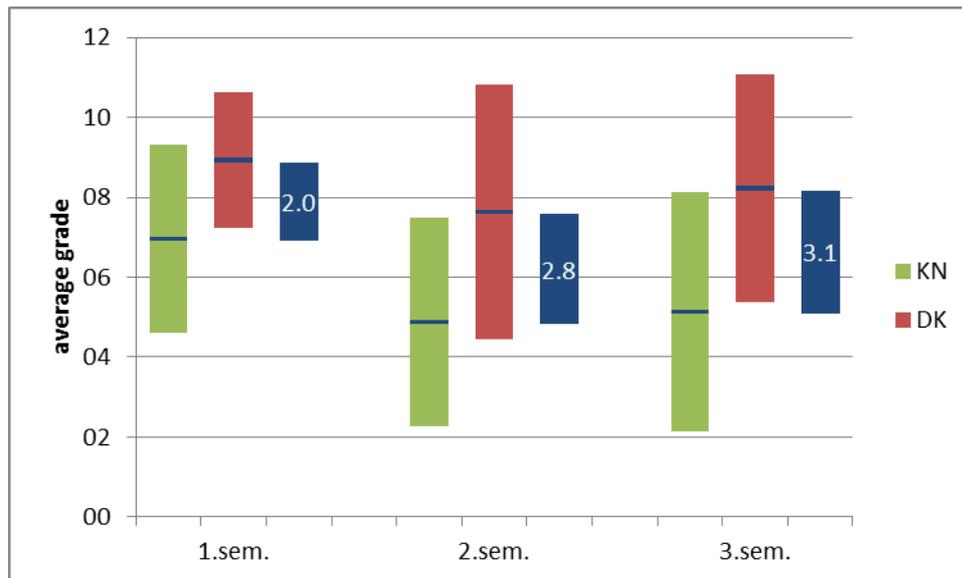
However, the increase in the number of admissions has been successful in the sense that although retention rates have not increased, there are now significantly more Greenlandic Arctic engineers graduating.

### *The Academic Range*

Generally, there has been a tendency that students from Denmark have been very motivated as it has often been slightly older students who have chosen the challenge of moving all the way to Greenland in order to begin their engineering studies. This may contribute to Danish students performing well in the program and having a higher retention rate than the DTU average.

Among the Greenlandic students there has been a significantly larger dispersion in achievement. The program recruits a small number of highly motivated and focused Greenlandic young people, who are performing comparably with the Danish students. But there is a large group of academically weaker students of which some are also uncertain about their fields of study. For some the choice of an engineering education is based on a limited knowledge of engineering because Greenland is greatly lacking role in models, since there are very few Greenlandic engineers. From talks with all new students it has become clear, that many students have more or less chosen the education because they performed reasonably well in math in high school.

On average, the Greenlandic students have lower grades in mathematics, physics and chemistry from their qualifying exam compared with Danish students. Therefore, it is expected that the average mark for Greenlandic students in the first semester would be lower than their Danish counterparts, but unfortunately this difference grows from the first to the third semester as shown in Figure 4.



**Figure 4:** Average grades with standard deviation for courses at the first 3 semesters respectively of Arctic Technology for 53 Greenlandic (KN) and 42 Danish (DK) students starting 2007-2012 and completing the 3 semesters. The small bars with numbers indicate the difference between average grades for Greenlandic and Danish students.

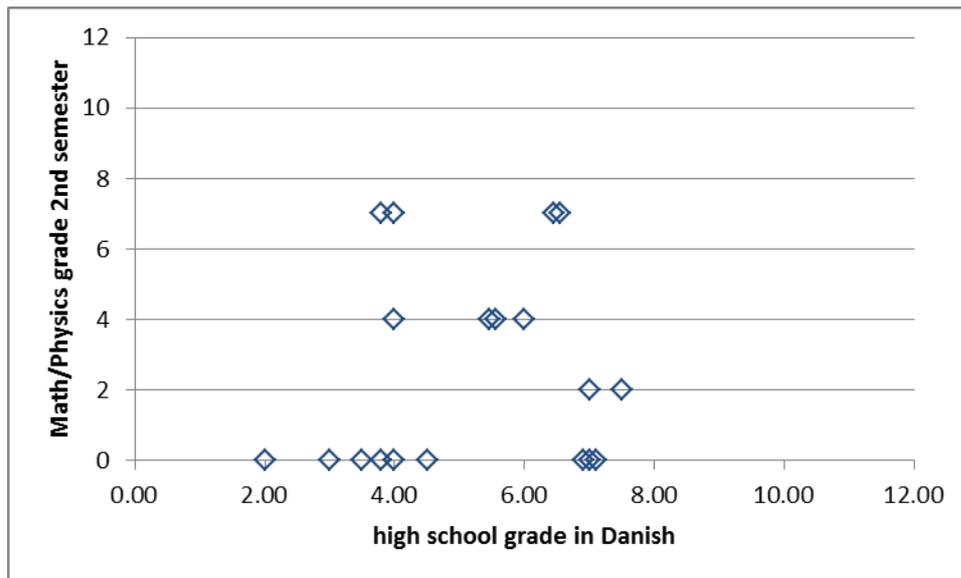
It seems that Danish students through their cultural background and language skills are quicker at adapting to university studies.

Another major challenge is that some of the Greenlandic students are not what one would call 'study ready' and thus academically 'disciplined'. Although studying in Sisimiut is very structured compared with a Danish university, some students show low or volatile attendance and arrive inadequately prepared for class; circumstances which are naturally reflected by their study results. The Greenlandic students spend on average as much time studying a week as the Danish students, but they spend their time in a slightly different way - they spend on average more time in class and less at home, reading and studying independently (Christensen 2014).

### *The Language Barrier*

For many of the Greenlandic students the fact that the training is conducted in Danish poses a major challenge. Even though they have left the secondary education with reasonable marks in Danish, it quickly turns out that they have difficulty understanding the technical terms used in lectures. Reading academic texts seems difficult and time consuming – even if the texts are available in Greenlandic, as the Greenlandic written language is very complex; it is seen in a class that all students with Greenlandic as first language choose the Danish text over the text translated to Greenlandic.

For some, writing an academic report is very challenging, and the teachers in some cases do not understand what the student is writing. Sometimes, the written work is reasonably readable, but the Greenlandic language's significantly different structure in combination with a different Greenlandic narrative style has influenced the writing in Danish, making it difficult to interpret a clear meaning. A study of the connection between the Greenlandic students' Danish proficiency in high school and their grade in the second semester course Mathematics in Physics indicates, as shown in Figure 5, that there is a correlation, although it is far from linear.



**Figure 5:** Grades in the course Math in Physics vs. average high school grades in oral and written Danish language for Greenlandic students starting 2012 and 2013. The character 2 is the minimum acceptable level. Of 9 students with an average high school grade below 5, 6 failed the Math in Physics course. Of 10 students with a high school grade above 5 only 3 failed, of which one did not show up for personal reasons.

There is a more linear relationship between the marks in mathematics and the physics course in the engineering program and marks based on a weighted average of mathematics, physics and chemistry marks from high school. But it is not generally the case that those who have low marks in Danish also have low marks in math/physics/chemistry, so this cannot explain Figure 5.

Since the program's start several attempts have been made to strengthen the Greenlandic students' proficiency in Danish through additional training, but with little effect. The reason may be that the extra lessons have been given in the afternoon, when the students must prepare for the next day's education and also cultivate their hobbies and family life, so gradually the students have dropped out.

More comprehensive Danish lessons will now be introduced to support the students' major written assignments. This will be focused on direct assistance to each student's current written work, with a focus on writing a legible report in 'engineering jargon'.

### *The Intercultural Interaction*

The language barrier often means that the Greenlandic students are very reluctant to speak up in the classroom or during group work and so the Danish students become dominant.

The cultural differences greatly enhance this tendency. Speaking one's mind and debating are ingrained in the Danish culture, something most have learned from childhood, unlike in the Greenlandic tradition where discussions and disagreements are something to be avoided. The Greenlandic cultural restraint is historical – in small communities, disagreements can be unfavourable (Lynge 1977; Hendriksen 2013). This response pattern is still an ingrained part of the culture of Greenland, and especially for the population not from the bilingual elite and for those from the smaller settlements.

This response pattern has been reinforced by the fact that for generations Danes made most of the decisions, and decisions even today are often made from a Danish frame of reference. Many Greenlanders have resigned to this fact rather than trying to change it, because of their cultural reluctance to engage in conflict.

It can be said that this cultural pattern has been and continues to be extremely useful in several contexts, but it is often a disadvantage in the interaction, or rather the confrontation, with the Danish culture. Furthermore it is a barrier in the modern based educational system not at least in the engineering education, where the ability to argue is evaluated highly. When the majority of Greenlanders are silent or withdraw, the Danes, or the Greenlanders who more easily use the Danish frame of reference, end up setting the agenda. Thus the cultural differences reinforce the Danish students becoming dominant in the classroom. It also poses important challenges for group work, because the Danish students experience that they lead, and as they are usually best at writing in Danish, they also soon take over large parts of the writing process. Overall, it means that the Danish students often feel that they do most of the work, and by dominating in the classroom and in group work, they may also be 'taking' a greater share of the learning.

On the other hand, based on our interviews with Greenlandic students, most of them feel that the Danish students control and decide everything, and if they try to raise any objections to the decisions, they feel that the Danish students are more persistent in their argumentation and thereby overrule their inputs. When the Greenlandic students experience this on a continued basis they have a tendency to resign and withdraw from the dialogue and from the group work, which reinforces the negative spiral.

This issue is something that we try to focus on and deal with. Not because the Greenlandic students must uncritically learn the Danish cultural frame of reference, but because the Greenlandic and Danish students should obtain an understanding of the cultural differences and challenges present and in a constructive way seek to work with them as basic for shared learning and synergy (Kahlig 1999). This is not just important for all of them in their further education at DTU in Denmark and in their future engineering work in Greenland or elsewhere in the Arctic, where they will constantly run into challenges and conflicts arising from the interaction between different cultures. It is fundamental for developing an integrative engineering practice that is able to deal with the Greenlandic context.

In addition to the linguistic and cultural challenges of adapting to a foreign system in their second language, some of the Greenlandic students are also burdened by the social and personal problems they grew up with, largely as a result of the disruption caused by the same foreign system, and it inevitably affects both their commitment to education and their ability to cope with the intercultural challenges.

## **Discussion**

The Arctic engineering education has been a success in the sense that it supplies to Greenland Greenlandic engineers, who exhibit solid knowledge of the Greenlandic society and the technical challenges associated with the extreme Arctic climate. The success is best measured by the fact that all graduates have a job, with 95% of the Greenlandic engineers and a couple of the Danish working in Greenland. There is great demand for the Arctic engineers in Greenland.

However, it has still not been possible to solve the challenges that arise from the fact that some of the Greenlandic students begin with inadequate prerequisites, and many start the program without sufficient academic levels in Danish, mathematics and natural sciences from their primary and secondary educations, the latter of which is still provided in most students' second language. It is very difficult for a higher education institution to raise the level of the basic prerequisite areas, while the students have to follow the rapid progression in the engineering disciplines. As a consequence, the focus is now on guiding the students that are estimated not to be able to complete the program to change to another study before moving to Denmark, in order to avoid the defeat of dropping out of the program while in Denmark.

In order to attract Greenlandic students with better qualifications in the long term, ARTEK has started initiatives to further the inclination of Greenlandic high school students to study natural science subjects. And it is the intention that the initiatives are to be extended to primary school, because this is where the foundation has to be laid, and the need for qualified teachers in math and science is significant. Also, there are plans to introduce language teaching to the supplementary courses many Greenlandic students must complete in order to achieve the required levels in math, physics and chemistry.

The societal problem that primary and secondary schools do not provide youth with the necessary study skills is now widely acknowledged on the political – and administrative level, but there is also a recognition that it will take years to solve this challenge. Therefore, it is crucial that we at ARTEK get better at strengthening the general study skills of the Greenlandic students, and improve their qualifications to continue the program when they, after the first three semesters, transfer to DTU in Denmark. This is a challenge we are constantly working with and where we gradually are figuring out better teaching methods to meet the Greenlandic students.

One of the methods we have tried is to motivate the best Danish students to consciously involve and include the Greenlandic students in group work and draw on their experiences and contacts in Greenland as a way to appreciate and value their informal skills. This has primarily succeeded in subjects where knowledge of Greenlandic society and local knowledge is often a prerequisite for good and holistic problem solving. And in those cases there has been an extremely positive synergy where the students have been able to develop some solutions to problems that neither of the two cultural groups had been able to solve on their own based on their different frames of reference and thus various formal and informal skills and knowledge.

However, this approach has not always been successful. Group work is difficult, and intercultural group work is a challenge - even if all students attend. Sometimes the intercultural differences created a negative synergy because some of the Danish students were very brash and dominant in their work, and some of the Greenlandic students mentally withdrew from the partnership, choosing to focus on small details so that their knowledge and skills never came into play. Other times, some Greenlandic students' involvement and contributions were so limited that it created conflicts and they retired mentally, and the Danish students in turn felt that solving the whole task depended on them.

Although the program overall is a success, there is clearly room for improvement. It is a delicate matter to take Greenlandic young people with weak Danish language and inadequate study strategies hinged on cultural differences, and force them to adapt to European university studies. At times we need to ask ourselves whether we in fact violate these young people by 'forcing'

them through such training and teaching. On the other hand, if more young Greenlanders do not break the cycle of disadvantage and complete higher education, Greenland is stuck in a disproportionate dependence on outside labor and dominance of a Danish born elite, while large parts of the population are excluded from both labor and influence. Thus social inequality is increased and society's social cohesion is challenged.

## Notes

1. From 2009, Greenland transitioned to Self Rule with expanded domestic political powers but still as part of the Danish Kingdom and subject to Danish foreign and defense policy, as well as the Danish legal system and police.
2. Interview with Greenlandic students at the Arctic Engineering education in Sisimiut, Greenland.
3. Based on data from Statistics Greenland.
4. Including a. o. social help, social pension, housing support.

## References

- Bjerregaard, P. (2004): Folkesundhed i Grønland, *Inussuk Arktisk Forskningsjournal* 1: 2004.
- Bjerregaard, P., Dahl-Petersen, I.K. (2008). Befolkningsundersøgelsen i Grønland 2005-2007, Levevilkår, livsstil og helbred, *Statens Institut for Folkesundhed*.
- Bjerregaard, P., Aidt, E. C. (2010): Levevilkår, livsstil og helbred, Befolkningsundersøgelsen i Grønland 2005-2009, *Statens Institut for Folkesundhed*.
- Bang, J., K. Oldendow, & T. Stauning. (1940). Grønland. København: Grønlandske Selskab.
- Boserup, M. (1963). Økonomisk politik i Grønland, Grønlandsudvalget af 1960.
- Bro, H. (1993). Grønland. Kilder til en dansk kolonihistorie. Det Grønlandske Selskab.
- Chemnitz, L. (2005). Greenland: Danish-Speaking Students in Denmark: Language and Identity Conflicts. *Indigenous Affairs*. 3(4): 54-59.
- Christensen, H.P. (2008): Interdisciplinary Just-in-time Teaching – Active Learning in a Multicultural Setting, *Proceedings of the Eight International Workshop on Active Learning in Engineering Education* (pp. 309-314). Bogotá, Colombia.
- Christensen, H.P. (2014). The Continuous Challenge in Teaching Engineering to Students from a Society with no Tradition for Higher Education, 12<sup>th</sup> Active Learning in Engineering Education workshop, Caxias do Sul, Brazil, 20-22 January.
- Dahl, J. (2000). Hastig kulturel og social udvikling i det arktiske område, *Udviklingsforskning, udviklingspolitik og udviklingsentreprise, INUSSUK 1, 2000, Grønlands Hjemmestyre*.
- Grønlandskommissionen. (1950): Grønlandskommissionens betænkning.

- Grønlands Statistik (2014). Statistikbank.
- Grønlandsudvalget. (1964). Betænkning fra Grønlandsudvalget af 1960, Betænkning nr. 363.
- Heinrich, J. (2010). Eske Brun og det moderne Grønlands tilblivelse 1932 – 64, PhD afhandling.
- Hendriksen, K. (2012). Skolebørn fra bygder er med til at bryde den sociale arv, *Sermitsiaq* 09.
- Hendriksen, K. (2013). Grønlands bygder – økonomi og udviklingsdynamik, INUSSUK – *Arktisk forskningsjournal* 3 – 2013, Naalakkersuisut – Grønlands Selvstyre.
- Jensen, F. (2008). Frank Jensen om Grønland – Behov for opgør med uligheden, Politiken 25. november 2008 (Tidligere juristminister og medlem af Selvstyrekommissionen).
- Kahlig, W. (1999). Grønlands kultur- og samfundsforskning 98/99, Ilisimatusarfik/Forlag Atuagkat.
- Lidegaard, M. (1961). Grønlands historie, J. H. Schultz Forlag.
- Lidegaard, M. (1993). Grønlændernes kristning, Atuakkiorfik.
- Lyng, F. (1977). Tanker i et bulldozerspor, Det Grønlandske Forlag.
- Naalakkersuisuts Uddannelsesplan II (2014). Departementet for Uddannelse, Kirke, Kultur og Ligestilling, Greenland Self Rule Government.
- Olsen, C.C. (2004). Nordens sprog – med rødder og fødder, Nordisk Ministerråd.