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Research based educations for future foodscapes – the New NordicFood4Many experience

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Background

Foodservice has for a long time had the reputation and image as a “mundane everyday life activity in prosaic settings”¹ characterized by low salaries and limited education of the working staff². As a result it has traditionally not been attracting academic interest. However the sector has experienced a significant turn over the past decade. An increasing awareness of the cost of public service provision during the New Public Management era in the last two decades had resulted in efforts to develop more cost-effective forms of such provision^{3,4}. The continuous requirement for cutting the costs of large scale meal production has led to increased interest in the use of more industrial type technologies, i.e. sous-vide, cook-chill and modified atmosphere packaging in the food service⁵. But also the health agenda has contributed. Unhealthy eating and lifestyles have become an increasing problem and are considered to constitute one of the leading causes of the rise in obesity and overweight among children, adolescents and adults in European societies. Also, undernutrition among the elderly and the hospitalized has put focus on the public food sector. Since eating out of home contributes significantly to our food intake, policy documents increasingly call for the importance of involving this sector in strategies that can counteract this development^{6,7,8,9,10}. Workplaces^{11,12} as well as schools and other institutions for young people^{13,14,15,16} have experienced a dramatic increase in interest. The responsibility of procurement for large scale meal production in sustainable food systems is increasingly being called for^{17,18}. Commercial large-scale food production and restaurant food have at the same time enjoyed increasing interest¹⁹ and are recognized as a sector of huge economic significance and with its own research and higher education needs²⁰.

The aim of this paper is to present and discuss a New Nordic approach to higher education aiming at meeting the new demands of the out of home eating sector. It presents 4 Nordic examples of research based educations that aims at contributing to workforce development for the profession involved in future out of home eating foodscapes. It discusses some of the overall themes that future higher education for out of future captive foodscapes needs to address and, finally, presents a layout of an integrated joint Nordic educational initiative that will address these challenges.

Methods

The paper is a part of ongoing cooperation between higher education institutions in the Nordic countries on out of home eating under the New Nordic Food4Many umbrella. The New Nordic Food program was initiated by the Nordic Council of Ministers a decade ago. It aims at promoting and initiating research on the benefits of the New Nordic food both in the region as well as internationally. The NNF program has established several tracks including an initiative that looks at large scale catering and food service under that name of the Food4Many initiative. The cooperation has been in operation since 2010. This initiative looks at how public food service can add value to modern welfare systems by addressing some of society's future challenges. The aim is to increase exchange and mobility at teacher and student level across the Nordic countries and to improve the quality of the methods used.

For the current study a comparative cross Nordic approach was used. The educational programs were identified and the curricula teaching methods as well as the alumni described. The programs selected were from the universities participating in the Food4Many initiative. They represent approximately half of the undergraduate and graduate programs that teach out of home subjects in the Nordic countries. The result can be seen in Table 1. At the next step the statistics related to the part of the student projects and part of the candidate jobs attained after graduation were calculated. The results can also be seen in Table 1.

1. Case of Denmark

The Danish Foodservice sector has experienced a marked change in the past decades. Especially public food has become the subject of political interest with focus on strategies aimed at providing healthier and sustainable food. As one of the results of this modernization of the foodservice sector⁵ the research and educational sector has increased their attention to foodservice and its needs for proper training of professionals for future challenges. The modernization has also resulted in a call for new approaches to education for the future workforce in the sector. The graduate program "Integrated Food Studies" and the undergraduate "Professional Bachelor in Nutrition and Health" has, over recent years, established itself as an educational path to new types of jobs in the food and foodservice sector. This path is building on an understanding that future professionals need a broader, multi disciplinary approach. It also assumes that future professionals increasingly need skills knowledge and competencies at graduate level. The foundation for the new path now available in higher education is the broad notion of foodscapes and its counterpart - the captive foodscape profession. Captive foodscapes are about the complex interactions between people, meals and spaces taking place in institutional food settings and how they influence our eating patterns and eventually our health²¹. The modernization of the Danish foodservice sector rests on a holistic understanding of how the complex issues of foodservice, culinary arts and meal sciences have evolved. Policy makers involved in public food issues are increasingly basing their decisions and strategies on evidence based research and require advice from professionals with a research based educational background. To cater for the new demands of the food sector in general including the demands of the captive foodscapes sector, a mobility track with a special focus on public food systems has developed over the past years. It consists of the undergraduate Professional BSc in Nutrition and Health offered at Metropol University College and the Integrated Food Studies at Aalborg University.

Undergraduate level

The BSc Professional Bachelor in Nutrition and Health is offered by Metropolitan University College in Copenhagen and by three other University Colleges in Denmark. The education is 210 ECTS and is undergraduate. The curriculum builds upon research-based teaching, projects and problem based learning including a half year internship. The first 1½ years covers basic themes such as nutrition, food chemistry, microbiology, food safety, cooking science, food culture, consumer science and pedagogy. The students divide into three different specializations: Management, Food and Service; Health Promotion and Health Prevention, and Clinical Dietetics. The specialization Management, Food and Service is directly connected to out of home eating and cover theory of science, service-management, product-development, foodservice systems, innovation, and facilitate management. Themes like meal experiences, hospitality, service design, sustainability, organic food systems, food waste, work environment and food literacy have been core themes during the last five years of teaching. The BSc candidates are offered jobs within teaching, counseling, food-safety and catering managers in the public food sector. The program is taught in Danish but there is a nearly a parallel English language track available under the name of Global Bachelor in Health.

Graduate level

The integrated Food Studies are offered at Aalborg University on the Copenhagen campus. It is 120 ECTS and the last 2 years are full time study. The curriculum builds on a transdisciplinary approach resting on three pillars. These are public health nutrition & meals science, gastronomy & design and policy and innovation. The teaching is based on the problem based learning approach (PBL) and the conceptual foundation originates from foodscape studies²¹. The ECTS are split between 60 for lecturing and 60 is projects. The student will work the last semester on a 30 ECTS I master thesis. Projects can be either laboratory experiments in the Foodscapelab (foodscapelab.aau.dk) or it can be field study/living lab studies. The candidates will be offered a variety of different jobs, some within the foodservice sector. The teaching is all in English.

Alumni

The experiences from the first batches of students on bachelor's as well as master's level show increasing demands for students at master level for jobs in the food sector in general and also signs of interest for this level in the public food sector. Decisions in this sector are increasingly expected to be based on best available evidence and research based knowledge. Also the complexity in the food sector implies a demand of professionals with a cross-disciplinary approach and of professionals that are familiar with working in teams and project environments. The topics chosen by the students for master thesis so far have shown an overwhelming interest for topics selected from the out of home eating sector.

2a. Case of Sweden

Food and Meal Science is an interdisciplinary research and education field at Kristianstad University with a vision to create a sustainable and healthy society. Here gastronomists (BSc in Food and Meal Science) and teachers in home and consumer studies (MSc in Subject Education) are educated. The field include the areas "Nutrition and Health", "Food Science" and "Food Culture and Communication". The BSc-programme comprise science, craftsmanship and creativity. Theory is turned into practice through laboratory exercises and working life placements. In 2014, the program was evaluated to be of "very high quality" by the Swedish educational authority. Approximately 25

gastronomists graduate yearly and find work opportunities within industry, eg innovations and product development and within the public meal sector. Currently, efforts are made to develop a Master's degree program for students interested in further education.

The research group MEAL was founded 2013. One of the aims is to reach a holistic understanding of food and meals. Research projects include sensory, consumer and nutritional aspects in relation to age, culture and health. Food habits and behavior are of interest as well as sociological aspects. Further key concepts, such as “*cooking*” and “*meal*“, are explored from different angles of the field. It was also interesting to note that the focus of cooking for many of the students was primarily set upon culture and communication, rather than on nutrition and health²². The research is a key factor in the academisation of the field and will lay a stable ground for education at MSc-level. Food and meal science has a great opportunity to combine and use aspects from the different areas in order to form a holistic understanding within research and education.

Alumni

The alumni from Kristianstad University can be found in a variety of organizations. The graduated teachers in home and consumer studies are almost 100% found in different teaching activities, since there is a large demand for these teachers both from public and private schools and the job opportunities are many. The alumni with a BSc degree can mainly be found in restaurants, in the public meal sector and in product development. The demand for educated persons within the food and meal sector is high and the holistic perspective given at the educations at Kristianstad University is attractive. There are also some of the alumni who continue their studies into MSc level.

2b. Case of Sweden

The increasing importance of food service sector means new demands for knowledge, skills and competencies of the staff in the restaurant sector as well as in the public meal settings. The four bachelor programs currently run at School of Hospitality, Culinary Arts and Meal Science, Örebro University at the Campus in Grythyttan is Culinary Arts and Meal Science; Sommelier, culinary arts and meal science; Hotel and Hospitality; Culinary arts and ecology. All these four bachelor programs are spanning three years. The strength of the programs is the combination of all aspects of the areas of hospitality, nutrition, culinary arts and meal sciences. This combination, in regards to teaching expertise in the scientific areas involved as well as in concurrent skills and craftsmanship, is required for a holistic level of competence within the foodservice profession. A one-year master program and a PhD program complete the three cycles of academic training. Plans for a two-year master program, which will be taught in English are under development.

Research within the research group nutrition, meal design and food culture is currently focusing on childhood intake of fruit and vegetables, childhood growth and nutrition, food for elderly, combinations of food and drink in the Swedish diet and historical as well as cultural aspects of meal developments and foodservice in Sweden. The aim of this research group is to, through our research, substantially contribute to all three cycles of academic training at our department. There is a great need to develop knowledge producers and flexible solutions in the foodservice area, not only foodservice staff in a rigid system. In regards to the current huge increase in meals eaten outside of home, in public settings as well as in the classical restaurant and all types of catering developments, the foodservice worker and – developer needs to have a solid knowledge base, an innovative mind and a never ending sensitivity for

food trends. Collaboration with local foodservice institutions and –industry is imperative for the successful future of the sector.

The FAMM model is often talked about as being a good model when planning and evaluating meals and meal service establishments. This model has also been taken into account when it comes to training culinary chefs and sommeliers at Örebro University. It includes the environment of the meal, the product as such including sensory and nutritious qualities, the service provided and is dependent on the steering system including policy that rules the purchasing, the staff, the environment and the production. The professional development is certainly one part of the steering system. No meal can have a high quality if only one link fails to work – if the person purchasing the ingredients makes a mistake or consciously buys a lower quality than necessary and the absolutely best meal ever can be ruined by sloppy service or a crowded, noisy or an esthetically uninteresting environment.

Our master program at Örebro University deals with the framework of the meal model, more explicitly going through and investigating the separate parts in order to provide more in-depth knowledge of how to start and how to run a restaurant or other foodservice establishment. The master program which is currently a one year master, will prepare the students for a future career in the restaurant or foodservice business or for an academic career, doing research on culinary arts and meal science.

Alumni

The alumni from the department can be traced all over the foodservice sector in Sweden and internationally. The students are often tempted to leave the training program early due to recruitment from the foodservice sector. Attractive positions in the foodservice sector often demand master's level training. Combinations with studies in business economy are frequent. Since the students already in the bachelor year 2 have an internship part, which is spent at different work places around Sweden and abroad, the students early on get acquainted with life at work. The students also have a reasonable amount of knowledge in regards to how to evaluate research, where to find updated information regarding research and about policy as well as legal aspects of their future work.

3. Case of Finland

Due to the global environmental developments and more conscious consumers, there is a growing interest towards sustainable food systems worldwide. In the Nordic countries New Nordic Food has also brought sustainability and re-localization into discussion. Sustainability calls for holistic trans-disciplinary approaches and system thinking in education; however, this cannot yet be seen much in the existing curricula in higher education. In Finland Master in Food Sciences (Food Technology, Food Chemistry, Food Economy, Nutrition) is offered by the University of Helsinki, Master in Health Sciences (Nutrition, with a specialization in clinical nutrition) by the University of Eastern Finland. Food service or hospitality studies in higher education are in the curricula of Universities of Applied Sciences, since their establishment early 1990s on Bachelor level, and since 2006 also on Master level. The teaching approach rests on the principles of experiential learning and the idea of Sustainable Gastronomy is the thematic platform.

Undergraduate level

JAMK University of Applied Sciences introduced, in Autumn 2014, specialization studies on Sustainable Gastronomy as part of Bachelor of Hospitality Management degree (111 ECTS cr out of

210 ECTS cr degree), educating graduates with a comprehensive understanding of the sustainable food chain and eco-gastronomy. Seeing food through the sustainable food system lens²³ with a highly multidisciplinary approach is central. The future graduates can pursue their careers in various sectors, one of them being the public food services, a sector prominent in Finland for example due to its free school catering system since 1940s. Due to the relatively high number of elective studies (25cr), the students will graduate with an individual focus. In order to educate innovative and responsible agents of change in the dynamic context of food in society, experiential learning was chosen as pedagogy. The choice was encouraged by the positive results on different variations of experiential learning used in agroecology and food studies^{24,25}. The students' competences will be built in cooperation with the industry, for example through company and producer visits, study tours, real-life development projects, practical training periods and thesis assignments²⁶.

Graduate level

JAMK University of Applied Sciences started Master's Degree Program in Hospitality Management (90 ECTS credits) in 2006. The leading pedagogical idea behind the education has been learning by solving real-life cases in all the courses and through Master's theses. The students are seen as organic links between the university and industry. The education is implemented as part time education. Students working and studying simultaneously is beneficial for both parties: on one hand students can relate all their learning assignments to their work, on the other hand the employer can develop its business and processes applying the state-of-the art theoretical knowledge in cooperation with higher education. Even though the majority of students have been from food services or education, the student body represents the broad variety of the hospitality sector, which is beneficial for students to widen their professional perspective. Sustainable management, service development and logistics, purchasing, foresight and innovation and development methods, service design and customer oriented services are examples of content of the programme. Continuous quality assurance has been carried out through self-assessment and an accreditation process is in its planning phase.

Alumni

JAMK University of Applied Sciences programmes enhance careers in food business, production and hospitality, but due to their focus on innovation and sustainability offer an excellent way to move forward into a new career in food. Graduates will be able to make interventions concerning food, and develop activities within diverse environments such as business, education, communications, the non-profit sector, social enterprise and more. Several Master alumni work as managers in sizeable food service or other service organizations, and stay so strongly in contact with the university that it could be called a partnership. Due to the global nature of food international cooperation is important and offers the alumni something new as continuous education. A research on the impact of the education is now ongoing.

Discussion

This paper has presented 4 examples of higher education pathways offered at Nordic Universities and University Colleges all catering for the future needs of the captive foodscape sector. The programs are all at M.Sc as well as B.Sc. but some of the universities offer further education at post graduate level. We conclude that the new demands and pressures put on both the public as well as the private out of

home sector has resulted in a “scientification” and “academisation” of the art of foodservice, culinary arts and meal sciences. Large scale food settings are increasingly being involved in studies using evidence based methods and politicians are more and more requesting sound evidence before making strategic decisions on public food issues. In the commercial sector there is an increasing call for the application of research based methods. This development also reflects in the educational sector. The New Nordic⁴ Many cooperation has given inspiration in particular to the educational system and in efforts to increase student mobility within the Nordic countries.

Workforce development²⁷ is an important element in developing the sector. Knowledge skills and competencies in the workforce in relation to administration, management, strategic development of food policy, planning of large-scale meal service operations in hospitals, developing element of experience economy and hospitality in captive foodscapes such as institutions, cafeterias, prisons schools etc. but also in the diverse and broad sector of hospitality industry are some of the duties that future profession practitioners needs to be able to master. Knowledge skills and competencies must cover policies and procedures; food procurement, decision on equipment and supplies; food safety, gastronomy and design as well as sanitation standards. Universities in the Nordic countries have in different ways attempted to address this development by offering new educational opportunities and the New Nordic food & cuisine movement has fueled a new interest in exchanging insights and experiences. The Nordic region shares similarities in the ways of handling food for many. More than six million public meals are served in the Nordic region every day, and although with differences the approach to healthy and sustainable food cultures has also inspired the out of home eating sector considerably over the past decade. With the current increase of meals served outside of home, there is a dire need of well trained staff to plan, prepare and serve those meals, whether eaten in a public meal setting or at a culinary distinguished restaurant. The demand for staff is high, but the well trained staff is not always preferred due to higher salary demands and since they are more or less outnumbered. It becomes more and more important to make it known that foodservice staff need to be able to show a minimum set of competencies in order to be able to make the foodservice professions more attractive, better paid and at the same time more likely to produce enjoyable and nutritious meals.

Some of the themes that will challenge the sector in the future and that has been identified in the ongoing Nordic cooperation includes sustainable out of home eating, co- creation of meals, short supply chains, ageing societies as well as healthy schools and workplaces. Among the new demands and challenges the issue of sustainability should be emphasized. It has been studied that sustainability calls for more holistic perspectives and multi/transdisciplinary approaches, understanding complexity of food systems, system thinking, cooperation with various stakeholders as well as operation both on local and global level simultaneously. This theme will be embedded in the development of cross Nordic curricula for food for the Many. Another theme that will be integrated in the development is the concept of co-creation. Co creation of meal experiences in out of home settings has increasingly been studied from different perspectives^{28,29}. Taking a co-creational approach to hospitality and meal experiences implies an understanding of a shared responsibility between the professionals and the patrons in the meal situation.

The number of elderly in is steadily increasing and the number of beds in nursing homes are decreasing. This means that a number of elderly and old elderly will be staying in their own homes until a later stage in life and will need foodservice at home. At the same time, chefs in the restaurant and

foodservice business is getting more and more involved in the purchasing, planning and production of public meals, perhaps in order to avoid working late hours in stressful restaurant environments. Well trained professionals are certainly needed here, and especially those that find it important to provide well-cooked and attractive meals to young and old. This growing number of posts will need to be occupied by those that possess the knowledge, skills and inspiration that a higher training program can give them.

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APPENDIX

Table 1. Overview of the undergraduate and graduate programs analyzed in the study.

Country	University	Level	Topics covered	ECTS	Teaching form	Alumni	Offered in	Duration	Link	Language
DK	UC Metropol	BSc	Food technology, cooking science, food safety, sustainability legislation, meals science, nutrition, health promotion, management, innovation	210	Teaching, Project and problem based learning, Internship	Teaching, Counseling Catering-Managers Public food sector	Copenhagen	3,5	1	Danish
	AAU,	MSc	Public health nutrition, meals science, gastronomy design, policy innovation	120. The 60 are lecturing and 60 is projects. 30 is master thesis	Problem based learning. Projects are laboratory experiments (foodscapelab.a au.dk) or field study/living lab studies	Teaching in higher education, project management, food industry, public sector food	Copenhagen	2	2	English
SE	OUR	BSc	Hospitality, Culinary Arts and Meal Science Choice of Culinary chef, Sommelier and Hotelier Hospitality and Meal Science Meal Ecology	180 including 15 internship and 15 bachelor project 60 separate modules and including 15 master thesis 180 as a combined exam including natural science and meal science	Lecturing, experimental cooking, service and sensory science, meal design, meal economy etc. project work, literature study and research methods Lecturing, lab work, service and sensory science, meal design, meal economy, chemistry Sustainability etc.	Teaching in higher education and research, career in food business, restaurateur or hospitality business both private and business sector Teaching and research, regional responsibility for purchasing of foods for public meals etc.	Grythyttan	3 + 1 3	3	Swedish offered in English 2016 Swedish

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	HKR		Main subject is Food and Meal Science which include Food Science, Food Culture and Communication, Health and Nutrition, Creativity and Craftmanship	180, including 15 bachelor thesis. Courses for teachers in Home and Consumer Studies in 15 ECTS-modules 180 as a combined exam including natural science and meal science	Science, craftsmanship and creativity. Theory is turned into practice through laborative exercises and working life placements. Lecturing, lab work, service and sensory science, meal design, meal economy, chemistry Sustainability etc.	Within industry, eg innovations and product development and within the public meal sector. Teachers in home and consumer studies. Teaching and research, regional responsibility for purchasing of foods for public meals etc.	Kristianstad	3	4	Swedish
FI	JAMK	BSc	Responsible business and management in hospitality, Development methods for sustainable service industry, Customer and risk management Sustainable food chain, Multidisciplinary approach to food culture, Food quality, Food communication and consumption, Responsible innovative food business	90/210 (including 30 cr placement and 30 cr Bachelor's thesis)	Experience and service design, co-creation, trans-disciplinary applied research projects with the industry Experiential learning, co-creation, living lab, experience and service design	Teaching in higher education, project management, food industry, private and public sector in hospitality Career in food business, production and hospitality, both private and public sector	Jyväskylä	3 y 3.5 ^a	5	Finnish & English
FI	JAMK	MSc	Responsible business and management in hospitality, Development methods for sustainable service industry, Customer and risk management	90	Experience and service design, co-creation, trans-disciplinary applied research projects with the industry	Teaching in higher education, project management, food industry, private and public sector in hospitality	Jyväskylä	3 ^a	6	Finnish

Notes. ^a = part time.

1. <http://www.phmetropol.dk/Uddannelser/PB+ernaering+sundhed/Uddannelsen>
2. <http://www.aau.dk/uddannelser/kandidat/integrated-food-studies>
3. <http://www.oru.se/Utbildning/Program/Program-i-Grythyttan/>

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Table 2. Proportion of project and candidate jobs in the field of out of home eating

Country	University	Name of Program	Level		% in OOH eating sector				
			Under graduate	Graduate	Student projects				Alumni
					2012 ⁴	2013	2014	2015 ⁴	
DK	Metropol, BSc	Nutrition and Health Undergraduate Program ¹	x		15	18	16	15	N.A.
	AAU, MSc	Integrated Food Studies, Graduate Program ²		x	31	34	32	35	N.A. ⁵
SE	Örebro Universitet BSc	Culinary Chef	x		90	90	90	90	3000 ⁶
		Meal Ecology	x			30	50	N.A.	
	MSc	Hospitality, Culinary Arts and Meal Science, one-year master as separate elective courses ⁷		x	0	50	0	50	
	Kristianstad University BSc	Gastronomy Program	x		12	17	12	23	29 ³
		Home and consumer studies, Education program		x					
FI	JAMK University of Applied Sciences	Bachelor in Hospitality Management (with specialization in Sustainable Gastronomy, until 2014 Restaurant and Catering Services)	x		29	35	40	100	149
	JAMK University of Applied Sciences	Master in Hospitality Management, JAMK ² University of Applied Sciences,		x	18	27	43	50	36

Notes: ¹Students who have selected the specialization Management, Food and Service from all three possible specializations (Management, Food and Service, Health Promotion and Health Prevention and Clinical Dietetics). ²Calculated from a total of 69 projects. ³Calculated from a total of 83 candidates. ⁴Cover only 1 semester = ½ year. ⁵ Statistics not available since first students graduated 2014 ⁶Altogether since start of training programmes in Grythyttan more than 20 years ago. ⁷Mix sommeliers, culinary chefs and hoteliers and very few students who have passed, hence differing percentages from year to year.