

# The Future of Food Science and Technology: A Summary

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## Contents

1.0	Background	Page 3
2.0	Introduction	Page 4
3.0	Workshop Summary	Page 5
4.0	Proposed Solutions	Page 7
	Short-term	Page 7
	Medium-term	Page 8
	Long-term	Page 9
5.0	Conclusions	Page 10
6.0	Next Steps	Page 11
7.0	Closing Statement	Page 12

## 1.0 Background

The food and drink industry is a key sector for the UK economy. It employs over 500,000 people and is worth an estimated £77.4bn per year. There are a number of forces that drive the sector and therefore reflect and represent the pressures on individual food and drink businesses. Such drivers include:

- Consumer change and rapid reaction of food and drink companies to deliver new products;
- Changing technology and the constant drive to improve performance and productivity;
- Market power and particularly the purchasing power of the multiple chain stores;
- Continuing and increasing (Government) Regulation.

The success of the sector has been attributed in part to its ability to innovate, particularly through product development and enhancement. To maintain and grow our capability in this area it is essential that the industry has a constant flow of Food Scientists and Technologists (FST). Improve, in partnership with the Department for Environment and Rural Affairs (DEFRA) and the Institute of Food Science and Technology (IFST) have conducted extensive research across the UK food and drink sector to determine the critical issues emerging from perceived changes in both demand and supply of food scientists. This has confirmed recent educational figures that show there has been a steady decline in degree subjects such as Food Science and Food and Beverage Studies. It also highlighted that employers across the UK are already facing recruitment difficulties at all levels of food science and in addition are seeing a decline in the quality of applicants for FST roles. An outcome is that employers are having to increase workload and hours for existing staff, pay higher wages to recruit and retain the best and make use of alternative sources for quality and assurance, new product development and regulatory compliance to ensure they are able to meet market demands.

The impact of these issues are now being felt across the UK food and drink sector, as the research from Improve shows that of the current 9,000 FST roles in the UK, approximately 25% (2,360) are permanently vacant. The question is therefore, 'how do we improve the supply of people entering FST programmes and subsequently into the sector?'

## 2.0 Introduction

To address this key issue for the sector, Improve in conjunction with IFST and DEFRA held an event in September 2008 to establish what actions needed to be in place to ensure that there is an adequate supply of skilled food science and technologists in the UK.

The event was attended by more than 50 delegates from leading industry and education organisations to discuss the issues faced in the sector and to gather views on what the solutions could be. The morning session consisted of keynote presentations from Jack Matthews (CEO, Improve) and Professor Jack Pearce (Immediate Past President, Institute of Food Science and Technology) setting out research and information from both the demand and supply perspective. The afternoon session consisted of a series of workshops to identify and discuss how industry stakeholders can work closer and better together to ensure the required supply of food science and technologists in the UK.

The key aims of the day were to understand how:

- To raise and understand better the issue of demand and supply of qualified food scientists and technologists in the UK food and drink manufacturing industry;
- To consider how what is seen as a growing skills gap can be addressed, a skills gap that is having a detrimental effect on the efficiency, product development capacity, product quality and compliance requirements of the sector;
- To involve all interested and engaged parties from both the supply side (Further Education and Higher Education) and demand side (employers), as well other organisations such as Government departments, trade associations, professional institutions and regulatory bodies in identifying solutions and actions.

### 3.0 Workshop Summary

The table below provides a detailed analysis of the feedback received during the workshops.

Issue	We need to...	So that...	Even though...
1	Maintain flexibility and assume responsibility in addressing this issue	We can cope with external pressures beyond our control	This requires industry commitment and investment in value added activities
2	Engage employers with providers, educate both about each other, and encourage them not to be frightened about radical change	Design the most effective appropriate programs/courses, give access to all, create centres of excellence	It will be resisted, it will be costly, it will not happen over night, it will challenge status quo
3	Involve the retailers in supply chain thinking and solutions	Increased collaboration occurs	They may not see it as their problem
4	Build up the sharing of knowledge and information on the best FST courses and programmes	Support and best practice becomes the norm, more efficient and effective utilisation of food science courses	This will involve companies trusting each other and partnering other stakeholders and challenging current provision
5	Ensure we understand the whole picture who are the lead drivers in the industry for FST	We need to redesign existing programmes to meet changing demands, NPD, Quality Control etc	It will be difficult to get existing suppliers to develop such flexibility if there are only small numbers
6	Identify a mechanism used by all where training needs and delivery are matched	Food science programmes meet the changing needs in skills and vacancies supply and demand	There are very diverse needs and pathways towards achieving these
7	Become the recognised world leader in performance and world class food and drink	Our FST and other training/skills programmes and providers are sought out by others and we can establish a globally recognised Centre(s) of Excellence	This will involve all of the different parties needing to recognise working together is the only way to achieve this
8	Construct strong co-operative working on FST to meet collective need for quality food science applications	We identify the first milestones to be achieved and a course of joint action to get there	Everyone who is involved will have to be prepared to take on a role and responsibility
9	Avoid risk of not training people in sufficient numbers at the right level	We don't compromise the safety of the public and the industry	Reluctance of students to study this and company involvement
10	Change!	Things improve ref: FST numbers and quality coming out of colleges and university	The industry is huge so that change task is huge – where do we start?
11	Facilitate employee mobility	We can have the best people in the right place	Unglamorous reputation and financial constraints
12	Increase profile of industry	Young people have a warm feeling about industry... working in a factory may have a poor image	Emphasis on Science and Food Science maybe a turnoff for some
13	Be good customers of British farmers	We have supply security	Demand for energy crops will increase
14	Have a high quality competitive food manufacturing industry	We compete successfully in a global market	Overseas competitors will try and stop us
15	Have a highly skilled food professionals	The industry is optimally resourced to meet all challenges	The education base is poor
16	Use the opportunity of 2012 Olympics	To engage people in healthy lifestyles	Its difficult for our sector, we are not directly involved as we supply from a secondary position
17	Promote a better understanding knowledge, as people don't know	You know about the whole food chain, all the people, opportunities	This will take time and effort
18	Find another TV champion – A sort of Jamie Oliver	More people can relate to the sector	Not everyone may like him/her
19	Consult more with industry as to their views and willingness to commit to recruit FST graduates	The product (course or programme) meets the need	The course may be less attractive to the students than the wider range of electives and options currently available
20	Work together to promote and support the development of the industry	The profile is increased and people want to work in the industry	Time and effort timescale
21	Encourage support to Higher Education	They are able to deliver food studies	It is not a "fashionable" subject of choice

Table continued...

<b>Issue</b>	<b>We need to...</b>	<b>So that...</b>	<b>Even though...</b>
22	Address skills shortage	We have fit for purpose employees	Lack of easily accessible courses, lack of responses, etc.
23	Organise a competition between schools whereby teams of pupils compete on a project relevant to the sector and FST	We raise the profile as early on as possible – at primary school	Might take time to deliver results
24	Look at the solutions creatively	We widen the audience	This creates extra work and making changes
25	Identify those with transferable skills	We can target a different group	
26	Identify clear career paths aligned to qualifications	Individuals can progress from vocational areas	This has not traditionally been the route in FST
27	Change the culture with providers and employers to introduce solutions that address the lifestyle and family requirements of potential FST students and recruits e.g. flexible hours etc.	We are encouraging people with potential to change careers into food science	This goes against the current standardisation approach in terms of employee terms and conditions
28	Spread the message via careers/schools	We have possible open minds	Market competition/best practice
29	Understand specific industry needs	Collective learning and development will be aligned to deliver solutions	No immediate benefit
30	Sustain and grow our food science and technology supply	We continue to produce our own, and not remain reliant on migrant labour to meet our needs	The initial investment to do this maybe more costly than recruiting overseas
31	Increase the supply of food scientists/technicians in the future	We can continue to innovate and compete	The trend of supply is downward
32	Be proactive and creative about the provision and quality of courses.	Enables a longer term vision of what's needed to be successful	There are barriers to investment e.g. the time it will take to put new provision in place – will our employers wait that long?
33	Ensure and maintain food safety at all times	Our products are seen as the safest and most reliable for quality	The costs of regulation and compliance are increasing
34	Have all the people we need to fill out vacancies	Can be successful and competitive	Demand exceeds supply at the moment
35	Clearly identify responsibilities and be accountable	Plans to be executed effectively	that culture is not universal

Although the workshops identified many issues within the sector, the most common response was that both industry and education must work closer together to identify what is required to address the skills shortages. The objective of this closer working would be to become more proactive and creative about the provision and quality of courses, but to also increase the awareness and perception of the opportunities available in the sector with school children and students at all levels and stages. At the core of this outcome, is the involvement of the careers service and advisors, subject teachers and parents in understanding the opportunities and options available to FST graduates/qualified people.

Of course, the problems associated with such an approach include; the time made available by industry to focus its attention on new entrants and education; changing the current education process to be more demand driven and the competitive pressures from overseas companies.

## 4.0 Proposed Solutions

Having identified the issues within the sector, the workshops then focussed on possible short, medium and long-term solutions. These are summarised in the following section.

<b>Short Term Solutions (up to 24 months)</b>
Introduce 'agreement' between education and industry to work together on solving key skills and competence issues e.g. FST shortage agreement defines the roles each will be responsible for actioning
Draw up a list of contributions of FST to the food processing industry to establish "added value"
Engage with industry and providers to communicate process and reasons for change
Industry has to commit to taking a number of skilled people and to undertake required investment in staff. Education has to commit to promoting food and drink sector as career of choice
Education revises curriculum of programmes and career information. Implements revisions e.g. vocational and academic, industrial placements, teacher training, industry centres of excellence, demand driven and unit based, work force oriented, programmes and courses
Industry to develop a programme of local and national educational support. Membership of HE/FE/Schools bodies, engagement in promoting opportunities and understanding of Food and Drink sector
We need to research the needs of the manufacturer but also of the retailer, government, EU to give the provider knowledge of their future direction on science and particularly food science and technology. Then create collaborative partnerships to create the campaigns to source and fund the means to deliver more students and trainees
Achieve consensus of stakeholders on what goals are applicable for which target audiences. Develop and implement critical activity plans with clear priorities, objectives, measures and outcomes
Establish stakeholder representative working group to drive and review progress on the above
Scope out a supply map of all available courses/education/careers knowledge & advice on FST
Identify and secure a Media Champion to address perceptions of food and drink manufacturing and processing
All organisations who attended the event to buy in to today's process, action plan & outcomes
Reach agreed consensus on the components of 'success'. What will success look like?
Raise awareness of issues & goals across all area's - Government, Organisations, Academia
Publicise FST opportunities to under graduates etc using case study material to improve flow of people into FST

<b>Medium Term Solutions (up to 3 years)</b>
Quantify the value of FST in terms of cost/benefit analysis – contract a series of case studies of FST graduates to illustrate the opportunities and variety of career choices
Feedback to industry and identify gaps in the companies that could improve their business
Engage with FST training providers to ensure courses meet industry needs. Identify short course opportunities to plug gaps
Increase numbers of students undertaking science and manufacturing programmes at school, FE, HE and via the workplace and ensure these are supported by employers at all stages including industry exposure and experience
DIUS and nations agree to fund food science studies at all levels to achieve world class recognition
Universities to cooperate as well as compete to ensure relevance, coverage and accessibility
Integrate food science into science curriculum teaching
Develop National Occupational Standard & core curriculum through stakeholder consultation
Primary School program developed and implemented
GCSE program developed and implemented
A-Level FST program developed and implemented. Link into the Diploma in Manufacturing and Product Design and into the developing Diploma in Science to ensure FST is a mainstream subject
Students are aware of best practice through experiential visits & placements as part of studies
Food factory clothing is made stylish and functional
Raise the profile for food industry through media events like Innovation Awards
Set up the FST steering group, diary its first meeting - allocate responsibility to those involved
Agree training delivery content for job roles. Source funding. Define measures
Improved links between industry & education
Increase in people enquiring about and choosing FST career paths and accessing relevant information
Increased retention of key FST staff

<b>Long Term Solutions (up to 5 years)</b>
Contribution of food science and knowledge to UK Food and Drink sector increases productivity, reduces waste, innovates consumption patterns etc and propels UK sector to world no 1 position in competitive advantage and recognition by customers and competitors
Long term agreements being put in place across education and business interface to create 'National Skills Partnerships' to drive demand led change in key skills issues such as FST
Link these collaborative partnerships into regional/national skills and economic targets. Set up international groups of businesses, universities, schools to ensure we establish real value benchmarking at the various levels of activity we are engaged into address this issue. Allocate national and regional funding linked across UK governments to deliver required coverage
Increased number of quality graduates through awareness of the food & drink industry
All new and refurbished food factories are seen and perceived as factories of the future
FST is established as a "Career of Choice" - Improved reputation of Food Manufacturing

The number of solutions given above reflects the passion and belief which many in the industry have of the sector. The overall consensus of those attending the event was that the industry must work more closely with one another, and agree a strategy to raise the profile of FST and the industry generally, as well as make it a more attractive subject to be studied at school, college and university. The final long term objective stated summarises very much the view of the workshop: To make FST (& the sector) the **"Career of Choice"**.

There is agreement that a Steering Group should be established to co-ordinate activity which promotes Food Science and Technology and its importance to the sector. This group would be tasked with collating examples of best practice to showcase the opportunities available in FST in the sector. These examples will be used by education, careers and the industry itself to attract new entrants to education and the market.

## 5.0 Conclusions

Overall, the event brought together key people from across the industry to discuss ways in which to improve the perception of the food and drink sector and to highlight the benefits of a career in FST. Feedback from the day highlighted to many that this is not just the industry's problem, and that communication must be improved between the industry and educational stakeholders.

The overarching finding from the event found that both industry and stakeholders thinking is in line with each other and are in agreement that a common strategy is required to harness the required action to achieve a goal of:

- Increasing the number of FSTs;
- Raising the quality of graduates;
- Encouraging and gaining higher numbers of school students taking FST as an academic and vocational subject;
- Training and involving teachers (subject and guidance) in experience and learning on the food and drink industry;
- Increasing the quality, access and relevance of careers information, establishing centre(s) of excellence in FST that will set the standard for all providers;
- Making the curriculum and course content applicable to the modern food and drink industry and making such programmes accessible to both students and trainees from the existing workforce;
- Making the allocated public funding for FST more applicable to the "new" programmes and directed by demand.

## 6.0 Next Steps

To address the issues discussed during the workshops, delegates were invited to write down one action to take back to their organisation. A summary of these are given below:

*I will report the outputs of today within DEFRA and I am sure we would be happy to meet further with Improve to discuss and progress next steps (DEFRA)*

*To communicate our ambitions within IFST and to identify actions that can contribute to driving this agenda for improvement and supply (IFST)*

*I will focus on developing the National Skills Academy's Food Innovation Network. Engaging with key HE/FE organisations on this critical issue so that by February 2009 we have a number of providers engaged in addressing the supply of food scientists (National Skills Academy for Food and Drink)*

*I will give feedback to the HR team's across the group (UK & Scotland) on today's session, and ensure consistent approach across UK with regards to current education links with FE/HE institutions that provide our food scientists (Youngs Seafood)*

*To communicate today's findings with colleagues and investigate how we can be involved with Improve on this issue (Northern Foods)*

*Take a pro-active role in carrying out the action plan resulting from today and present back to my business (Moy Park)*

*Develop a campaign with Improve to encourage FDF members to engage and participate in the solutions identified (FDF)*

*Make links with industry based colleagues and promote Government understanding, collaboration and exchange between organisations on this issue (Food Standards Agency)*

*I will talk to retailers (Tesco, Sainsbury's, M&S, Waitrose and Asda). I will talk to 10 manufacturers and involve them in addressing some of the key solutions. I will feedback comments. (CPA Recruitment)*

*Although I am already working with Improve, this will form a basis of more specific actions to progress. I will feedback to Improve's regional manager (Union Learn)*

*I will reaffirm with the senior operations team at Holbeach that although we are at the front of innovation in the provision of FST to meet the needs of industry we need to develop more initiatives (University of Lincoln)*

## **7.0 Closing Statement**

I would like to thank everyone who attended this event and in particular our partners in DEFRA and IFST for their support and participation. This event has given real impetus to a range of current and future activity to address the critical gaps and shortages identified in food science and technology across our industry.

Food Science is critical to our industry and to the nation. To produce safe, quality food and drink products that consistently meets consumer tastes and demand at prices all can afford lies at the heart of why the UK food and drink sector is a global player and competitive with the very best in other countries.

This event has however, brought home the fragility of the supply provision of quality food scientists and technologists. Food science is not being taught in our schools, fewer FE colleges are teaching it and fewer universities are offering it as a mainstream subject. We are becoming more dependent on recruiting food scientists and technologists from overseas because we can not train or attract enough from within our own educational institutions. This event has highlighted the commitment of those attending to do something about this situation and give real support to existing initiatives and help and involvement in identifying and implementing new ones.

This report sets out the steps all organisations who attended are prepared to undertake. It is a real call to action and Improve along with its partner organisations will be working with others to set up the activities, communications and information sharing needed to turn this commitment into action. My thanks to all. Watch this space!

***Jack Matthews, Chief Executive of Improve.***