

Contemporary European Bread and Pastry Production



Gary Mahon

Higher Education and Skills Group (formerly Skills Victoria) International TAFE Fellowship

An ISS Institute Fellowship



Department of Education and
Early Childhood Development



ISS Institute
Level 1
189 Faraday Street
Carlton Vic
AUSTRALIA 3053

T 03 9347 4583
F 03 9348 1474
E info@issinstitute.org.au
W www.issinstitute.org.au

Published by International Specialised Skills Institute, Melbourne

Extract published on www.issinstitute.org.au

© Copyright ISS Institute January 2013

This publication is copyright. No part may be reproduced by any process except in accordance with the provisions of the Copyright Act 1968.

Whilst this report has been accepted by ISS Institute, ISS Institute cannot provide expert peer review of the report, and except as may be required by law no responsibility can be accepted by ISS Institute for the content of the report or any links therein, or omissions, typographical, print or photographic errors, or inaccuracies that may occur after publication or otherwise. ISS Institute do not accept responsibility for the consequences of any action taken or omitted to be taken by any person as a consequence of anything contained in, or omitted from, this report.

Executive Summary

The aim of the Fellowship to Italy and France was to research current and contemporary bakery products.

The key aims were to improve knowledge about:

- Quality of the flour used in bakery
- Specialised techniques
- New machinery used in bread making
- Proving techniques
- Local produce used
- Quality bread making techniques.

Twenty years ago the Fellow decided to take a new direction in his career and become a teacher at NMIT. The challenges were many, the first teaching young apprentices and Certificate II in Commercial Cookery. Looking for more challenges the Fellow moved into pastry, breads, chocolates and gateaux. One of the main areas of interest was the challenge to improve the knowledge of breads, specifically French and Italian. The Fellow considers that the improvement of breads (both production and quality) in Australia is critical if we are to maintain a highly regarded baking industry.

The Fellow, Mahon, travelled to Southern Italy to research the breads of the region and to bring back important knowledge to pass on to students and the bakery industry. He was particularly interested in the different versions of focaccia, as these varied in their styles. He also researched traditional pizza dough and sweet Italian breads. The Fellow then travelled to France to look at the many and varied versions of baguette dough and how it affected the quality of the finished product. This included investigating the use of sourdough starters, the flavour of the bread and the texture. The experience at Lesaffre baking centre was the highlight of the trip. The baking technician and the skilful Artisan bakers had vast knowledge. The quality of the breads produced and the variety was amazing and it was understood that the least yeast used and the longer fermentation time produced high quality breads. The machinery used was of the highest quality and varied from dough mixing machines to dough provers. To bring back the knowledge and pass it onto the students has been highlight.

The Fellow also spent time at the Ritz Hotel in Paris, and this experience has improved his teaching skills. Learning varied skills, in particular Viennoiserie pastry, was another aspect of the Fellowship, and Mahon has already improved the quality of skill development in the classroom.

The Fellow is passionate about improving the quality of teaching the production of bakery goods in the classroom and to improve the quality of breads in the middle lower area of the market. The high end of the market is strong with high quality skills in many bakers. If we can lift standards in the other areas and educate the public to not accept low standards, Australia will develop and maintain a highly regarded bakery industry.

Table of Contents

i	Abbreviations/Acronyms
iii	Definitions
1	Acknowledgements
1	Awarding Body – International Specialised Skills Institute (ISS Institute)
2	Fellowship Supporter
2	Fellowship Sponsor
2	Supporters
5	About the Fellow
7	Aims of the Fellowship Program
9	Skills Deficiencies
11	The Australian Context
11	SWOT Analysis
13	The International Experience
13	Visit 1. Italian Institute for the Advanced Culinary and Pastry Arts, Soverato, Italy
17	Visit 2. Lesaffre Baking Centre, Lille, France
20	Visit 3. Ritz Hotel Cooking School, Paris, France
25	Knowledge Transfer: Applying the Outcomes
27	Recommendations
29	References

Abbreviations/Acronyms

W200 Italian style flour, with a rating strength of 200

Definitions

Crostata

Italian dessert tart

Innovation

Creating and meeting new needs with new technical and design styles [New realities of lifestyle]

'Sustainable Policies for a Dynamic Future', Carolynne Bourne AM, ISS Institute 2007

Skills deficiency

Skill deficiency is where a demand for labour has not been recognised and where accredited courses are not available through Australian higher education institutions. This demand is met where skills and knowledge are acquired on-the-job, gleaned from published material, or from working and/or study overseas.¹

Semi freddo

Semi frozen dessert

Sustainability

The ISS Institute follows the United Nations NGO on sustainability, "Sustainable Development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs"

Risotto milano

Risotto made in the style of Milan with parmigianoreggiano cheese

Viennoiserie

Baked goods made from eggs, butter, milk, cream, sugar (e.g. crossiant, brioche and Danish pastry)

¹ sustainabledevelopment.un.org

Acknowledgements

Gary Mahon would like to thank the following individuals and organisations who gave generously of their time and their expertise to assist, advise and guide Gary Mahon throughout the Fellowship program.

Awarding Body – International Specialised Skills Institute (ISS Institute)

The International Specialised Skills Institute Inc is an independent, national organisation that for over two decades has worked with Australian governments, industry and education institutions to enable individuals to gain enhanced skills and experience in traditional trades, professions and leading-edge technologies.

At the heart of the ISS Institute are our Fellows. Under the **Overseas Applied Research Fellowship Program** the Fellows travel overseas. Upon their return, they are required to pass on what they have learnt by

1. Preparing a detailed report for distribution to government departments, industry and educational institutions.
2. Recommending improvements to accredited educational courses.
3. Delivering training activities including workshops, conferences and forums.

Over 200 Australians have received Fellowships, across many industry sectors. In addition, recognised experts from overseas conduct training activities and events. To date, 22 leaders in their field have shared their expertise in Australia.

According to Skills Australia's 'Australian Workforce Futures: A National Workforce Development Strategy 2010':

Australia requires a highly skilled population to maintain and improve our economic position in the face of increasing global competition, and to have the skills to adapt to the introduction of new technology and rapid change.

International and Australian research indicates we need a deeper level of skills than currently exists in the Australian labour market to lift productivity. We need a workforce in which more people have skills, but also multiple and higher level skills and qualifications. Deepening skills across all occupations is crucial to achieving long-term productivity growth. It also reflects the recent trend for jobs to become more complex and the consequent increased demand for higher level skills. This trend is projected to continue regardless of whether we experience strong or weak economic growth in the future. Future environmental challenges will also create demand for more sustainability related skills across a range of industries and occupations.

In this context, the ISS Institute works with Fellows, industry and government to identify specific skills in Australia that require enhancing, where accredited courses are not available through Australian higher education institutions or other Registered Training Organisations. The Fellows' overseas experience sees them broadening and deepening their own professional practice, which they then share with their peers, industry and government upon their return. This is the focus of the ISS Institute's work.

For further information on our Fellows and our work see <http://www.issinstitute.org.au.Fellowship> Sponsor

Patron in Chief

Lady Primrose Potter AC

Patrons

Mr James MacKenzie
Mr Tony Schiavello

Founder/Board Member

Sir James Gobbo AC, CVO

Chairman

Mr Mark Bennetts

Board Members

Mr John Baker

Ms Julie Belle

Ms Sue Christophers

Mr Franco Fiorentini

Mr Jack O'Connell AO

Mr David Wittner AM

Acknowledgements

The Fellow would like to thank the following individual sponsors and supporters who supported him throughout the Fellowship program.

Fellowship supporters:

Philip Javier

Associate Director, Faculty of Hospitality, Tourism and Personal Services, NMIT.

Mahon thanks Javier for his support and faith with the application for this Fellowship.

Arthur Blewitt

Chief Executive Officer, AgriFood Skills Australia (AgriFoods)

Mahon thanks AgriFoods for their support of Mahon in his efforts to improve bread and pastry skills and the associated skills training available in Victoria.

Jeanette Allen

Industry Skills Council for the Service Industry

Mahon appreciates the letter of support and faith to improve his quality of teaching breads and pastry at NMIT.

Brendan Hill, Pastry and Bread Industry Adviser

Brendon Hill from Gordon TAFE who has many years experience in pastry, sugar and bread agreed to be the Fellow's industry mentor. He has worked in the industry and developed a vast knowledge of the issues and concerns. He was the Fellow's mentor and adviser, and assisted Mahon in his quest to seek out the best in French pastry schools in France and to also acquire some work experience in a pastry shop.

Phillip Jan, with 30 years in the hospitality industry, was the Fellow's mentor and adviser during his final report preparation and completion. He has vast knowledge in writing reports and his undoubted hospitality skills will be of immense help to the Fellow.

Course Acknowledgements

The program the Fellow successfully completed was a course at the Italian Baking and Pastry Academy, in Staletti (CZ) Italy, in addition to working briefly in local industry establishments. The course was classed as a full immersion course that was headed by John Notica who is the head of the Italian Academy. The program was a one-week immersion course in modern Italian breads, pastry and decoration. It was also a cultural experience in Italian cuisine including a visit to a gelato factory.

The two courses in France occurred at the Ritz School of Pastry in Paris, France, which included French breads and Viennoiserie pastry. Advanced pastries and desserts course was undertaken at the Lesaffre Baking Centre, in Lille, France, where the Fellow baked many different styles of French breads and inspected the quality of the structure in the bread. The courses ran for one week each and have greatly benefitted the Fellow in his further teaching.

Acknowledgements

Fellowship Sponsor

Higher Education and Skills Group (formerly Skills Victoria)

Australian Organisations Impacted by the Findings of this Report

The organisations that will benefit from the findings, the valuable learning and the outcomes of this Fellowship will be TAFE colleges, small bakeries and pastry establishments throughout Victoria. This Fellowship will hopefully influence the quality of the products produced and improve the knowledge and skill levels of students undertaking courses in the pastry and bread making area in the hospitality industry.

About the Fellow

Brief Biography

Gary Mahon has been in the Hospitality Industry for 40 years. He was enrolled at Auckland Institute while working in four and five star hotels in New Zealand. In this time he worked in all facets of a commercial kitchen, learning the skills needed to develop in the industry and to improve his skills.

In 1980 Mahon moved to Australia and worked in five star hotels in Perth, Gold Coast and Melbourne. He continued to improve his skill level as a chef and as a supervisor in these hotels.

In 1991 he started employment at Northern Metropolitan Institute of TAFE (NMIT), teaching apprentices undertaking the S1, S2, S3 and Certificate II in Hospitality (Kitchen Operations). During this time he also helped the apprentices with their employers advising them on their progress. The apprentices appreciated the feedback from school and work.

In 1998, Mahon helped to develop programs for Odyssey House using Certificate II and III in Commercial Cookery with the objective of helping to rehabilitate the residents and give them a future and purpose in life. This endeavour was very successful and many students acquired employment from the program. His involvement with Odyssey House gave him increased confidence and awareness of the need to adapt his teaching styles to accommodate special needs.

In 2004, with Commercial Cookery programs changing to being more baking orientated, the Fellow decided to improve his skills. He spent time in professional development in different courses including French breadmaking, chocolate making and modern French gateaux making available in Melbourne. His skills as a teacher improved immensely and the quality of work that students produce also improved to the point that they could be proud of what they have achieved.

In 2010 Mahon decided he needed to improve even more and give his students new and modern skills to ensure that the industry grows and keeps up with modern trends and methods. The use of modern techniques using machinery such as dough mixing machines and retarder proving machines improved the time factors in the mixing, proving and baking of bread.

Aims of the Fellowship Program

The aims of the Fellowship were:

1. To improve the understanding of high quality and modern practices in bread making and Viennoiserie pastries
2. To introduce contemporary knowledge to Victorian bakeries and pastry establishments, and to implement this knowledge into NMIT curriculum. The Victorian Baking Industry requires feedback to help it grow and to make sure the industry moves forward, improving standards in the future. Benefits to the bakery industry will include an understanding of using high quality flours; using minimally milled flours; and having an understanding of the milling process and the effects on bread dough thus improving the techniques used in making artisan breads and pastries
3. To improve student knowledge to effect change to Victorian pastry and bread kitchens through the research relating to the importance of modern machinery and the time efficiencies that may be gained from using the correct machinery to produce high quality products with fewer mistakes in production
4. To understand other current needs such as dietary requirements including gluten free flours, relevant issues such as lactose free and gluten free products and how to produce better quality breads in the future
5. To understand the uses and applications of pre-ferment methods
6. To experience advanced techniques in Viennoiserie laminating and enriched dough making, and to analyse the difference qualities of products and to improve the standard of pastries
7. To research speciality flours and wholegrains used in Artisan bakery and analyse different bread characteristics including gluten free flours such as maize, semolina, rice flour and tapioca flour. A particular focus was on choosing the correct flour for the making the specific dough and understanding the processes involved including understanding the chemical reaction which is generated and how it affects bread dough.

Skills Deficiencies

Australia needs to implement changes to education and improve baking courses to improve skill levels. We also must improve our knowledge in flour and yeast to upgrade the quality of the finished product to the customer.

Identifying the Skill Deficiencies

Skills Deficiencies: Definition

Knowledge needs to upgrade to improve skill levels.

Identifying and Defining the Deficiencies

Skill levels in the middle and lower end of the market need improvement.

Flours

In Australia there is a lack of variety in flour for quality breadmaking. To meet student learning requirements we need to look towards different sources such as Tasmania or overseas to get quality flour needed (multi grain, rye and wholemeal) to produce a loaf of bread that is of a superior quality.

There is also a growing demand for organic products such as organic flours, organic improvers, organic mixes, organic malt extracts and malt flours and baking programs should include the use of these products.

Yeast

To understand all facets of baking and pastry, in particular the characteristics of yeasts, micro organisms, and their application in bakery is important to this industry. The most important questions to be asked are which yeasts are used for certain products, and what is the difference between them.

The important knowledge needed for baking of selected bread from frozen dough, and how to ensure the quality of the product.

Flavour

Selectivity in the quality of the products used and more diversity in breads and Viennoiserie products are important success factors. Factors such as taste, colour and texture are important to improve the products produced.

Investigate taste and health as market changes require the development of new products, as well as aromas and textures of bread. The health benefits include low salt and fat content without losing quality.

To understand the variety of factors that indicates the quality of the product to the consumer.

Skills Deficiencies

Cultural differences

Italy, France and Britain have a great diversity in breads and pastries. What are the differences in each country? Understanding what is popular and the wide range of qualities is an important skill to learn. Italy, France and Britain all have selected breads that have been made for hundreds of years and there is little evidence of major change in these specific products therefore the main reasons for this consistency will be investigated.

To develop and understanding of the evolution of Viennoiserie pastries and how the quality of products has continually improved.

Machinery

With bread and pastry changing with the times, research into modern techniques is important such as understanding how dough retarders and mechanised bread making machines fit into mixing, baking of breads and pastries.

Understand the time factors in the baking process and how bakers can save on costs when comes to the final product.

Dietary

Visiting various bakeries and researching the many flours that can be used to make bread in efficient ways.

Allergies to wheat have changed, as has how we look at bread dough. Italy has had to change its thinking when it came to gluten content, and Mahon will identify how they have adapted to these changes. The difference in the flours is a key issue and how breads of quality are still made without gluten or with reduced gluten and still make a quality product is an important skill.

Ensure an understanding of making breads with health benefits such as high fibre, omega-3 and high calcium content, and educating the small bakeries about how they can improve the quality of their bread and also improve white breads in taste and health benefits.

Skills

The Australian industry needs to develop a greater number of professionals with higher skill levels in all aspects of bakery and pastry. To do this we need to research higher learning practices around the world. At the moment there are not enough artisan bakers and pastry chefs in Victoria to produce a consistent quality.

To upgrade knowledge and educate students, pastry chefs and bakers in the high end of bakery and also educate the smaller bakeries about making a higher quality product using similar ingredients. This will help to put enthusiasm into the bakery industry for the future.

The Australian Context

Brief Description of the Industry

The skill levels across the bakery industry in Victoria is varied, from skill levels of a very high standard to the other end of the scale where skill levels are very limited.

The Need for Additional Skills

The bakery industry needs to move up to a new level, with skill levels being improved across the industry. This will help across the board, in particular the middle and lower areas where skill levels are often lower than acceptable. We need to upgrade skills in these areas and to improve the quality of products produced. Baking courses need to be put in place or updated to improve the middle and lower end of the baking markets.

Benefits in Obtaining the Skills

The upgrading and improvement of skills will benefit the industry and workers with quality products and job satisfaction.

Benefits to the Baking Industry

The benefits would be quality products being produced and upgrading of skills.

SWOT Analysis of the Australian Baking Industry

The SWOT analysis indicated to the baking industry the areas which must be reviewed and revitalised in order to improve, and how these improvements can be made. There are many strengths in the baking industry, but it is important to continually improve in every facet. Looking closely at skill levels in specific and developing areas, customer knowledge and expectations, and also and job satisfaction achieved by those in the industry.

Strengths

- Currently working with quality machinery
- High quality ingredients
- Expert bakers in the high end of the market.

Weakness

- Lack of bakery courses to improve skill levels
- Complacency in producing quality products in the low to medium end of the market
- Lack of customers' knowledge of the products available
- The need for more bakery courses and traineeships.

The Australian Context

Opportunities

- The industry has a chance improve dramatically in the future
- Improving skill levels of professionals
- Job satisfaction
- Improving the quality of products in the low to medium end of the market.

Threats

The industry is under threat from low end products being mass-produced and the acceptance by the public of these products who don't know that there are better products available.

The International Experience

Visit 1. Italian Institute for the Advanced Culinary and Pastry Arts, Soverato, Italy

The region of Italy visited by the Fellow was Calabria and the sea-side town of Soverato. The region is well known for its natural beauty and resources. The area is rich in olive trees, stone fruits such as apricots, peaches, plums and also figs of many varieties. Wild herbs grow on the steep hill sides and when the rain comes, fresh wild mushrooms and white truffles can be picked. This abundance of natural resources makes Calabria a destination when sourcing fresh produce.

Each region of Italy has its own cuisine of classic dishes (i.e. pizza, pasta and pesto), developed in part as result of the following factors:

- Micro climate - this impacts the different produce available
- History
- Social economics – the wealth of the different regions.

The Fellow studied at the Italian Institute for the Advanced Culinary and Pastry Arts. The aim was to study Italian bread styles, tasting raw ingredients and understanding the flavours. An analysis of Italian wines from the southern regions of Italy was also a key factor in this study.

The first day of the program concentrated on sensorial analysis:

Tasting ingredients

The objective was to construct authentic Italian cakes and desserts. Emphasis was definitely on modern trends and seasons, comparing the taste of wild herbs, fruits, nuts and grains to give a wider perception of balancing new flavours indigenous to the Mediterranean.

Wine tasting

The Fellow sampled red wines from the southern regions of Italy together with cured meats, cheeses, marmalades, heart shaped breads that are braided, Calabria 'dolci' sweet white wines and passiti (dessert wines) from the region.

Italian flours

An analysis of Italian flours for taste, texture, elasticity, longevity of the product, cost and the availability of international substitutions was undertaken.

Flour and grain

The Fellow analysed Italy's unique flours and the common applications such as pasta, bread making using semolina, durum wheat, corn flour and whole wheat; also the use of spelt, buckwheat, truffle flour and chestnut flour.

Farina (flour)

The instructors stated that the flours used in making Italian breads must have a protein level between 10.5 and 12 using tender wheat flour. Flour with a high protein will have stronger gluten net, meaning the bread will have strength and holding power.

The International Experience

The second day involved working beside 'Master Chef' John Nocita. Participants prepared traditional Italian baked speciality breads. They included focaccia, ciabatta, pizza and grissini. The hands-on assembly demonstrated the use of both natural yeast and fast rising yeast. Nocita's demonstration covered the application of fresh herbs, liquid flavours, fats, cured vegetables and emulsions.

Special attention was focused on the preparation for commercialisation depending on the sector, such as restaurants, hotels and retail outlets. Traditional breads and secondary products and innovated creations were demonstrated and the correct techniques used for new recipes.

The participants prepared focaccia pugliese, a traditional focaccia finished with beautiful Italian tomatoes with strong natural fruit flavour.



The final preparation the Focaccia Pugliese before the Focaccia is baked



Finished focaccia puglieses shows the richness of the tomatoes and golden colour of Focaccia

Second day – varying bread styles:

The day concentrated on producing flavoured rolls, crostini, pizza and stuffed breads. In the morning pizza dough was produced and then used in the afternoon to prepare pizza. The dough used had high gluten content with interesting ingredients, including beer and cream. The dough had only a small amount of yeast and as a result the dough fermented at a slow rate, over four hours, which improved the flavour. The participants prepared all the ingredients for the pizzas including local olives, mushrooms, sundried tomatoes, cured meats and buffalo mozzarella. The preparation was placed in the fridge to be ready for late afternoon baking.

Preparation of classic Italian grissini:

The grissini was prepared with W200 flour with 10% protein. The mixture was mixed for a maximum of seven minutes, as the mixture does not need to have a high development of gluten. The mixture then had flavourings added, was rolled into a rectangle and allowed to triple in size, taking approximately 90 minutes. When the dough has proved it was cut into thin pieces and drawn out into a thin round rod and allowed to rise again until doubled in size.

In the afternoon John Nocita prepared the pizza oven. This process takes approximately two hours as the temperature needs to be 450 degrees Celsius. The wood used from old olive trees, burns at a slow rate and gives off a consistent heat. After being in the fridge the dough can be stretched easily. The ingredients were set up near the pizza oven and quickly added to the pizzas and placed into the oven for approximately three to four minutes. It is important that all the tools are clean and the floor of the pizza oven has no food scraps on it. It was a slightly difficult exercise as you had to work quickly and ensure the pizza moved around the oven so that it didn't burn. It was a fun exercise that was enjoyed by

all the students and with the various toppings there were interesting flavours.

Day three and four - plated desserts, savoury dishes (hot and cold) and decoration:

Participants were given instruction on the skills necessary to produce classic Italian desserts including semi-freddo, torts, crostata and plated desserts, focusing on hot months of the year and paying attention to clients' palates during this time of the year.

The day started with poaching fresh figs in vanilla sugar syrup. The process was a gentle one taking about an hour to poach the figs without losing shape.

When finished, the figs were soft with beautiful flavour. Next the group cooked fresh peaches slowly in sugar, vanilla and butter until just soft. The savoury dish was called pasticcio ferrarese. The base ingredients comprised beef and pork mince, porcini mushrooms, black truffles, béchamel and rigatoni pasta. The method followed was to cook the meat with no oil on a low heat for approximately 40 minutes, rendering the meat down to a well-cooked, dry flavoursome mince. To this was added porcini mushroom, black truffles, béchamel and the rigatoni mix last, then season. The mixture was placed into a short pastry base and covered with puff pastry. This dish is traditional in the area of Calabria. The sweet dish comprised of a sweet pastry base, blind baked and filled with stewed peaches. The peaches had a red colour to them that made the tart very attractive. The finished tart was served with vanilla gelato.



Wood Fired oven



Perfect shape of resulting figs



Finished Peach tart

The International Experience



The Soverato Market



Fresh scampi at the Soverato market



Various dried meats at the Soverato market

The final day at the Italian culinary institute was a cultural visit to the market at Soverato. The market had a wide range of produce including fresh vegetables, fresh and dried meats and fish. As the group made their way through the market the Fellow had the opportunity to try various meats, cheeses and fruit. The weather was warm the market stalls selling meat and fish had refrigerated areas to stop the meat and seafood spoiling. The seafood was caught daily and brought to market in pristine condition. Other areas didn't have (or need) cooling, as the market opened early in the morning before it became too hot. The stalls also had many pickled and brined vegetables such as olives and roasted capsicum. The range of cured meats was varied, from hot salami that is the favourite in southern Italy to milder varieties to suit all palates. The market at Soverato had many interesting foods to view and try, and gave an insight into the foods eaten in the area as demonstrated in the photographs. People purchase fresh produce everyday; it is a normal part of everyday life.

The experience in southern Italy was varied. The quality of the marinated and dried fish was sometimes suspect as it seemed to be left in the sun for long periods, but most of the produce was fresh and of a high quality and refrigerated or placed on ice.

Visit 2. Mr Nigel Saunders and Mr Francois Jourquin, Lesaffre Baking Centre, Lille, France

The Lesaffre Baking Centre is located in Lille in northern France. This is one of the major centres in the world for expertise in training in innovative ideas in bread making and the use of yeast to suit the specific customer's needs in producing quality products. Lesaffre are world leaders in yeast production and produce yeast for many applications.

The baking centre understands the customer's requirements, whether it's technical support, or new innovated ideas and products. From Bangladesh to Africa, the technical staff travel the world to improve the quality of the products they produce. In the morning Saunders, one of the bakery technicians, talked about yeast application and research on the quality of flour used in the making of bread. Lesaffre also import yeast from around the world to ensure they are on the cutting edge when it comes to the quality of the yeast produced there. Lesaffre have five experimental laboratories for bread dough. They check the dough for density, how yeast reacts and how long the dough takes to rise to optimum peak. The technicians use miniature dough kneaders that stretch and manipulate the dough to check the gluten and how the gluten reacts. They also have a machine that checks when yeast rises in the dough and when it is at its optimum for baking. Every day the experimental kitchens make different breads from kugloff to baguette. The technicians experiment with using different flours and at the time the Fellow was there, they were working on a bread dough for the Asian market that had 50% rice flour content.

Five yeasts were learnt about during the training:

- Liquid yeast - shelf life of three to four weeks at 4-6 Celsius
- Compressed yeast - shelf life three to eight weeks at 4-10 Celsius
- Crumbled yeast - shelf life four weeks at 4-6 Celsius
- Frozen yeast - shelf life 18 months at minus 18 Celsius
- Instant yeast - shelf life two years in ambient temperature vacuum packaging.

The morning was spent visiting the different test kitchens and laboratories. Lesaffre Baking Centre has many areas and the laboratories experiment with different strains of yeast and their applications. Bread doughs are examined for many and varied reasons. Each day both the test kitchens and laboratories turn many different types of bread for testing. All the breads are labelled with different colours and as the breads are made they are examined for a range of properties. At the end of each day bread that can be eaten would be given out to the staff. As the breads are of high quality the staff were quick to gather up the loaves of bread.



Showing the different structure in the baguettes



The three different baguettes



The picture shows the flare up and golden crust formed on the baguette when it is removed from the oven

The International Experience

In the afternoon Nigel, the Baking Technician, talked about the production of handmade baguettes. The dough mixture was mixed to incorporate all ingredients and proved for six hours, being turned every two hours with no kneading. The only kneading was at the end of the process before proving. The baguette was of high quality with great structure.

The autolyse baguette (pointed), the flour, water and sour starter were allowed to absorb for half an hour. After absorption the yeast and salt were added and the dough was developed to 80 percent. The dough was knocked back after half an hour and rested for one hour. The dough was cut to size and moulded into baguettes and proved for 30 minutes or until there was slow spring back.

The third baguette was the traditional. The dough was mixed to 70 percent development and proved at 22-23 degrees Celsius over two hours with turns every hour. The fermentation was slow to develop the structure and flavour of the baguette.

The second day involved making sourdough, with the dough being prepared, mixed and placed in the fridge over night. The next day the dough was weighed into one kilogram pieces and placed into cloth-floured baskets and allowed to prove for two hours. The sourdough loaves were baked at 230 degrees Celsius for approximately 50 minutes. The sourdough loaves had a beautiful dark crust and excellent crumb structure.

The next dough prepared was an overnight baguette. The baguette dough was mixed on the machine to 70 percent development, placed into a container and allowed to prove slowly at 12 degrees Celsius. The dough was left for one hour before weighing and shaping. The other baguette was a polish which is made of fresh yeast and equal amounts of flour and water. The poolish mixture was allowed to ferment for one hour and then mixed into the flour and the remaining ingredients. The dough was left ferment for two more hours before shaping and the final proving. The baguettes were baked at 255 degrees Celsius for 20 minutes.

The final day at Lesaffre Baking Centre concentrated on producing classic French croissants, pain au chocolate and brioche, three of the classic pastries and breads of France. The croissant dough, because of long process, needed to be made first. In the first stage, the mixer was used with the dough hook. The croissant dough rested for one and a half hours before being used as the critical factor is that the butter and dough must be in the 14 degree Celsius range otherwise there will be problems laminating the dough. Francois, a very skilled baker, went through the process making sure the temperature was always in the correct range. Once the lamination process was complete, the dough was rested for a further half and hour before being rolled to 2.5 centimetres thickness and cut into croissant shapes and allowed to prove for 40 minutes. The croissants then baked at 200 degrees Celsius for 15 minutes. The important factors are colour, texture in the mouth, buttery taste and have an open structure. The next items produced were the pain au chocolate croissants. The croissant dough was used to make pain au chocolate. The dough was rolled out to 2.5 centimetres and chocolate sticks were placed inside and measured with cutter. The dough was then cut to size and allowed to double in size before baking at 200 degrees Celsius for 15 minutes.



Sourdough bread loaf

The International Experience



Polish baguette



Croissant dough that has been rolled



The pain au chocolate being rolled



Croissants baked and showing inside structure

After baking, the pain au chocolate showed excellent colour and presented a good structure.

The visit to Lesaffre improved the Fellow's knowledge of yeast, the varieties available and their uses. The quality of the personnel at Lesaffre Baking Centre was exceptional, and as seen in the photographs all the products produced were of a high standard. Lesaffre receives requests for assistance to solve many problems every year from around the world and they do their utmost help and advise their customers.

The International Experience

Visit 3. Ritz Hotel Cooking School, Paris, France

The visit to the Ritz Hotel involved theory and practical use of French breads and pastry.

The classes started at 9.30 am finishing at approximately 5.30 pm. The day started with theory on different grains. The teacher talked about the worrying push for basic white bread around the world, as it is cheap to produce and can be made in one hour. The French are standing fast and are producing high quality artisan breads such as sourdough, rye, multi grain and high quality baguette.

In the afternoon the session involved making different doughs. The doughs made were rye bread, multi grain and baguette. The first dough of the session was the baguette. The important points in making a baguette is the kneading, folding and shaping.



Ritz kitchen ovens



Bread display

Mechanical kneading

Mechanical kneading is using mixers with a dough hook or spiral. Mechanical mixing is done on two speeds: the first speed combines the ingredients; the second speed is at a faster rate that aerates the dough. Each recipe has different kneading times depending on the different flours used and how developed the dough needs to be. There are different theories on when certain ingredients are added, for instance salt can be added at the start with all the other ingredients but it is important to keep the yeast away from the salt as it inhibits the yeast and will kill it. The other theory is adding the salt later at the end of the mixing. Both approaches work and there is no difference to the quality of the finished product.



Quality of various items

Hand kneading

To prepare hand mixed dough it is important to place the yeast in a well and add a small amount of water to dilute the yeast, and then add salt and the remaining water. The dough will be sticky at this stage. To make the dough pliable and stretchy the dough needs to be pulled and hit on the bench as this helps to aerate the dough. The process should take approximately 20 minutes. The dough should be smooth without sticking to the working surface.

The understanding of first fermentation and bulk fermentation includes different types of starters and pre-ferments and dough taken from previous batches of bread dough.

When dough has been kneaded the dough is given a first fermentation or proofing or pointage (French). The ideal temperature for fermenting the dough is 23-25 degrees Celsius for specific times for different recipes as per recipe. Enriched dough requires varied proofing times because of the different ingredients.

Dividing, scaling and shaping the dough

After fermentation the dough needs to be divided and scaled then the dough is shaped into rounds called patons. The pre-shaping, which is called faconnage, consists of flattening the dough, rolling into itself and tightening and stretching the dough. When making round loaves the dough is brought together under the loaf and brought into a smooth loaf. When the shaped dough is ready for final proofing it is important to ensure the seams of the dough are on the bottom of the baking cloth and dusted with flour or in baskets lined with linen.

Second fermentation or proofing

When the loaves are shaped the next stage is to proof for the final time which is called appret. The final fermentation temperature 25-26 degrees Celsius.

The International Experience

Placing breads into the oven

After the second fermentation the bread is placed onto baking sheets. Many of the breads are cut on top with a razor blade, sharp knife or scissors. Other breads such as sourdough are dusted with flour and enriched breads such as brioche, croissant and Danish are egg washed.

Baking

There are two main methods for baking bread:

- Baking with steam is used for basic breads that have crispy crusts
- Baking without steam is for soft crust breads with tender crumb such as Danish and pastry Viennoiserie.



Variety of items produced by the class.

On the first day the class made a variety of French breads:

- Olive bread
- Fougasse with lardons of bacon
- Sourdough bread
- Fouee
- Rye bread
- Whole wheat bread.

The mixer used was a mechanical mixer and each dough was mixed for five minutes on slow speed and then on a faster speed for three minutes. As the dough were made they were allowed to have their first proof and after proving the dough were moulded into loaves and rolls. After that, the dough were placed into the prover retarder over night at two degrees Celsius. The retarder was programmed to turn on at approximately 6pm ready to bake when the class arrived at the school.

Before baking, many of the breads are scored with a razor blade (called 'lames') or with a pair of scissors. Some breads such as sourdough are dusted with flour before scoring. Viennoiserie breads are glazed with egg glaze before baking.

Over the next few days at the Ritz Hotel, the program included a wide range of French breads which included:

- Whole wheat bread
- Bran bread
- Fouace
- Decorated 'surprise bread'
- Pullman bread
- Hamburger buns
- Walnut sourdough bread

The International Experience

- Danish pastries
- Croissants
- Scones
- Soft rolls or milk rolls
- Brioche-style raisin Danish
- Puff pastry
- Kughoff
- English muffins
- Brioche style bread
- Apple turnovers
- Brioche.



The International Experience

Concluding Remarks

In summary, attending five locations was an excellent way to compare differing styles of operation and knowledge available in the international bakery industry. The Fellow is grateful for the support given at each of these locations.

Impact on Teaching

The impact on teaching is that it will improve the standard of teaching to bakery students and the satisfaction of producing higher quality products in the classroom. The teacher will be teaching the students to produce improved quality baking products bringing improved teaching satisfaction.

Effect on Apprentices

The effect on apprentices will be immense giving students better knowledge and the satisfaction that they can produce high quality items. The apprentices can pass their new found knowledge on which will develop bakery skills into the future.

Impact on the Fellow

The impact on the Fellow is the confidence gained to give knowledge and skills to the students and satisfaction and confidence to meet any challenge.

Knowledge Transfer: Applying the Outcomes

The Fellow intends to take a leading role in workshops to help improve the quality of bakery products, focusing on the specialised techniques in producing the French baguette and Viennoiserie pastry.

There will also be workshops on Italian focaccia and the various flavours. All workshops will be held for the specific reason of improving the quality breads and pastry in the industry.

Recommendations

Government.

The Government can insist upon improved required training in all TAFE colleges offering bakery courses, and ensure bakery students are educated in the wide range of knowledge needed in the techniques of bread making. This will in turn upgrade the quality of breads produced in Victoria but may require funding for the upgrade of equipment used in the production. There should also be funding made available to create more opportunities for apprentices to work overseas and bring back a wide range of knowledge and experience needed to improve techniques in bread production in Australia comparable to that being offered overseas.

Education and Training

The following courses and units all have components that need updating/modifying to enable them to compete with education and training/experience currently available overseas:

1. Cert 111 in Hospitality (Patisserie) Commercial Pastry Operations 2

SITHHPAT004A Prepare Bakery Products

2. Certificate 111 in Retail Bakery

FDFRB3014A Produce sweet yeast doughs

FDFRB3002A Produce bread dough

FDFRB3010A Process dough

FDFRB3005A Bake bread

FDFRB3009A Retard dough

FDFRB3011A Diagnose and respond to product and process faults (bread)

FDFRB 3013A Produce artisan breads

Professional Associations

TAFE Bakery Teachers Society needs to address these issues and become involved in ensuring that the standard of all bakery courses is lifted to compare favourably against that available overseas.

Student excursions to a variety of bakery establishments should be organised and supported to enable them to observe bread production and to note the quality of breads produced at each bakery, and to suggest improvements that could be made.

ISS Institute Inc

The fellow is prepared to run a workshop at NMIT in the future on qualities and production of baguettes, vennoisse pastries, and other products he worked on overseas.

Recommendations

Further Skills Deficiencies

Skills need to be improved over the next few years with upgraded education and also of the equipment available in the institutions offering these courses. Bakeries need to upgrade the quality of their products produced, as the skill level apparent in many Australian bakeries is of a lower quality than that found overseas. With these complacencies in a number of bakeries, the public expectations of the quality produced is lower. This skill deficiency can only be addressed by a continuous program of update and improvement in all courses offered by Australian TAFE institutions.

References

Endnotes

^{DE} *Sustainable Policies for a Dynamic Future*, Carolynne Bourne AM, ISS Institute 2007.

^{IN} Ibid.

^{SK} *Directory of Opportunities. Specialised Courses with Italy. Part 1: Veneto Region*, ISS Institute, 1991.

^{SU} The United Nations Non Government Organisation (NGO) has worked for many years to create a global buy-in on sustainability. Starting with the definition developed in 1987 this organisation is now working on many fronts to ensure that sustainability is understood and adopted by all sectors of Government, Industry, Education and the Community.

^{AK} Skills Australia's *Australian Workforce Futures: A National Workforce Development Strategy 2010*, pp. 1-2. http://www.issinstitute.org.au/pdfs/WWF_strategy.pdf