International Specialised Skills Institute 2016

BEYOND 25 YEARS OF SKILLS ENHANCEMENT

State Government Victoria Department of Education & Training

Artisan Gelato Training, Carpigiani Gelato University, Bologna, Italy

Angela Tsimiklis

An ISS Institute Fellowship sponsored by

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ISS Institute Inc

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International
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i. EXECUTIVE SUMMARY

The Fellow is now in a position to link Australian Industry stakeholders with various Governments and academics that have an international reputation and vision for the continued development of Artisan Gelato skills. The Fellow's understanding of Artisan Gelato has been significantly enhanced through undertaking the expert training, practical workplace development and exposure to the unique historical, culinary and cultural influences of Italy.

During the course of the Fellowship, the Fellow engaged the local and international hospitality industry, participating in site visits and meeting with numerous highly regarded industry professionals to understand their specialist equipment and key ingredient selections.

These consultations involved discussions of establishing a sustainable workforce and training programs in Artisan Gelato skills. The encouragement and contribution from these discussions have provided valuable input into the commencement of developing and structuring vocational educational training programs here in Australia. These programs will be designed to deliver the high standards required to introduce and make accessible the knowledge and skills required to advance and elevate the Artisan Gelato industry in Australia.

The Fellow is committed to sharing these valuable skills and knowledge with students, industries, businesses and governments: from the micro level of teaching her own students, through to being a source of knowledge and key point of reference for other educators and training providers.

Since completing the overseas training study tour component and returning to Australia, the Fellow has significantly advanced the project with the commencement of short courses and educational programs in Artisan Gelato. The Fellow has been in communication with the Italian Chamber of Commerce, industry bodies and educational institutions for the sharing of skills, knowledge and insights of knowledge gained during her Fellowship.

The recommendations that have emerged from the Fellowship may challenge Industry, Government and Training providers as several outcomes highlight a need to capitalise and construct a model towards installing Artisan Gelato Skills within Vocational Education Training culinary programs.

Additionally, an initiative to develop and establish a sustainable model for the continuous further education for culinary professionals will require a collaborative approach between Industry and Government that allows Australia to take full advantage of the boundless opportunities in advancing our thriving hospitality industry and supporting our dedicated culinary professionals.

The Fellow has a vision to encourage and support the establishment of an Australian Artisan Academy involving a collaboration between culinary leaders and academics who contribute and cultivate the enormous potential of Australia becoming a global leader in culinary educational. This vision she hopes will one day become a reality, creating tangible benefits for apprentices and opening doors to international collaboration for all professionals to create a stronger and highly skilled hospitality industry.

TABLE OF CONTENTS

ii. ABBREVIATIONS/ACRONYMS

CGU	Carpigiani Gelato University
FCAS	Florence Culinary Art School
HESG	Higher Education Skills Group
ISC	Industry Skills Councils
ISS Institute	International Specialised Skills Institute
RCA	Restaurant & Catering Australia
SSO	Skills Service Organisations (formerly Industry Skills Councils)
UK	United Kingdom
USA	United States of America
VET	Vocational Education and Training
WAI	William Angliss Institute

iii. DEFINITIONS

Ageing

A process where a cooled pasteurised milk gelato mixture is immediately left for a minimum of four hours before making into gelato.

Artisan

A skilled trade, made in a traditional or non-mechanised way using high-quality ingredients: (Craftperson)

Batch Freezer

Machine used to freeze base gelato mix incorporating air as to churns

Organoleptic

Aspects of food that an individual experience via the senses - including taste, sight, smell, and touch.

Overrun

The expansion of gelato or ice-cream through the incorporation of air during churning.

Skills Enhancement Requirements

Enhancement and improvement required in skills, knowledge and/or practice not currently available or implemented in Australia and the subsequent dissemination and sharing of those skills and recommendations.

1. ACKNOWLEDGEMENTS

Angela Tsimiklis thanks the following individuals and organisations that have generously given of their time and their expertise to assist, advise and guide her through this Fellowship program.

Awarding Body – International Specialised Skills Institute (ISS Institute)

The International Specialised Skills Institute (ISS Institute) is an independent, national organisation. In 2015 it is celebrating twenty-five (25) years working with Australian governments, industry education institutions and individuals to enable them to gain enhanced skills, knowledge and experience in traditional trades, professions and leading edge technologies.

At the heart of the ISS Institute are our individual 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:

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

Over 300 Australians have received Fellowships, across many industry sectors. In addition, recognised experts from overseas conduct training activities and events. To date, 25 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 and knowledge, but also multiple and higher level skills and qualifications. Deepening skills and knowledge 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 and knowledge across a range of industries and occupations.*

In this context, the ISS Institute works with our Fellows, industry and government to identify specific skills and knowledge 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 knowledge, 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.

Angela Tsimiklis also thanks the Bella Irlicht AM and staff (Ken Greenhill and Paul Sumner) of ISS Institute for their assistance in planning and development of the Fellowship and completion of this report.

Governance and Management:

1. ACKNOWLEDGEMENTS

Fellowship Sponsor - The Higher Education and Skills Group

The Victorian Government, through the Higher Education and Skills Group (HESG) of the Department of Education and Training, is responsible for the administration and coordination of programs for the provision of training and further education, adult education and employment services in Victoria and is a valued sponsor of the ISS Institute. Tsimiklis thanks them for providing funding for this Fellowship.

Supporters

In addition to the staff and management of ISS Institute, the following individuals and organisations gave very generously of their time and their expertise to assist, advise and guide me throughout the Fellowship process.

Australia

- Luca Bottallo — Secretary General, Italian Chamber of Commerce and Industry, Melbourne
- Melinda Brown — Head of National Industry Engagement, Service Skills Australia
- Pierrick Boyer — Executive Pastry Chef, RACV City Club (Le Petit Gateau) Melbourne
- Luca Naldoni — Director, Majors Group, Melbourne
- Ken Greenhill — Fellowship Adviser, International Specialised Skills Institute
- Donato Toce — Gelato Messina, Sydney and Melbourne
- Massimo Bidin — Gelateria Primavera, Melbourne

Italy

- Achille Sassoli — Carpigiani Gelato University, Bologna
- Stefano Tarquinio — Carpigiani Gelato University, Bologna
- Luisa Elena Fontana — Carpigiani Gelato University, Bologna
- Giuliano Alessandrini and Daniela Galdi and staff — Italian Chef Academy, Rome
- Sawako Hashimoto and staff — Florence Culinary Art School, Florence
- Artisan Gelatieri throughout Bologna, Florence, Venice, Rome and Naples

William Angliss Institute (Employer)

- Coralie de Jager — Centre Administrator, Centre for Food Trades and Culinary Arts, William Angliss Institute
- Mark Agius — Manager, Centre for Food Trades and Culinary Arts, William Angliss Institute
- Dan Mabilia — Associate Director, Vocational Education and Training, William Angliss Institute

- Patisserie Instructors from the Patisserie Program area
- Professional Cookery Instructors from the Professional Cookery Program area
- Higher Education Faculty and Short Courses

1. ACKNOWLEDGEMENTS

Tsimiklis further acknowledges the support of William Angliss Institute for providing the time and the additional funding required to undertake the HESG Fellowship and associated activities.

Other Professional and Industry Organisations

Government and Education Providers

- Higher Education Skills Group
- Service Skills Australia
- Melbourne City Council
- William Angliss Institute
- TAFE Directors Australia
- Victorian Tourism and Hospitality Educators' Network (TAFE representatives)

Industry

- William Angliss Institute Patisserie and Professional Cookery Industry Advisory Groups
- Network of local Pastry Chefs, Chefs and Commercial Caterers throughout Melbourne
- Providers of Training to Industry (RTOs and Private Trainers)
- Industry Trainees - Apprentices and Non-Apprentices
- Local Artisan Gelaterias
- Research Contacts – Local Hospitality Industry (Various restaurants, cafes, patisseries and hotels)

Professional Associations and Supporters

- Carpigiani Gelato University, Bologna, Italy
- Majors Group (Australian Agent and Supplier of Carpigiani Gelato Making Equipment and Ingredients)
- Italian Chamber of Commerce and Industry
- Australian Culinary Federation
- Les Toques Blanches
- Industry Trade Publications (including Open House, Hotel Australia and Business Baking)

Community

- Melbourne Food and Wine Festival
- Fine Foods Expo (Melbourne and Sydney)
- EAT Magazine
- William Angliss Institute Short Courses
- VinItalia, Melbourne 2015

1. ACKNOWLEDGEMENTS

Personal Acknowledgements

- Steven Tsimiklis – for providing immeasurable support and encouragement throughout the Fellowship.
- George Revell Cannell – my late father for his guidance and encouragement throughout my career that has enabled me to embark on this exciting personal and professional journey in life.

2. ABOUT THE FELLOW

Name Angela Tsimiklis

Employment

Program Leader - Patisserie Programs, Centre for Food Trades and Culinary Arts, William Angliss Institute, Melbourne, Australia

Qualifications

- Master of Education (VET), 2014.
- Bachelor of Arts – Majors: Politics and Philosophy, 2011.
- Diploma of Vocational Education and Training Practice (21697VIC), 2008.
- Certificate IV in Training and Assessment (TAE40110), 2005.
- Diploma of Advanced Hotel and Restaurant Patisserie, 1998.
- Certificate III Commercial Cookery, 1987.

Memberships

- Les Toques Blanches (Australian Division)
- William Angliss Institute Patisserie Industry Advisory Group – Chair
- Victorian Tourism Hospitality Educators' Network
- International Food Educators' Network – Member

Brief Biography

Tsimiklis is the Program Leader of Patisserie Programs at William Angliss Institute, a nationally and internationally renowned specialist centre for foods, tourism and hospitality and events education located in Melbourne, Australia.

Tsimiklis was born in Adelaide, South Australia. She has been involved in the Hospitality industry for over 26 years working throughout Australia, United Kingdom and Asia in leading five-star hotels, restaurants, cafes and her own business. Angela's wide-ranging culinary and patisserie experience has also involved major events in Melbourne such as the Australian Open Tennis and the Melbourne Commonwealth Games 2006. Her desire to share her experience and passion for all things Patisserie provided her with a solid base to transition into the Vocational Education sector, focusing on a professional interest linking industry into the development and education of our future Pastry Chefs. Angela's "Learn What You Love" philosophy and her sense of enjoyment engages with students at all levels, ensuring her students are educated to the highest level and have fun while they are learning.

The Fellow holds a Bachelor Degree with majors in Politics and Philosophy and with a passion for learning she has continued to develop her educational credentials by completing a Master of Education. Tsimiklis possesses strong leadership skills and has developed a unique team of dedicated and highly skilled culinary educators who are at the forefront of providing recognised specialist Patisserie education in Melbourne, Australia. This team continues to design and deliver contemporary Patisserie programs, which have a global focus on skills development.

This global emphasis has provided opportunities for local students and vocational educators to travel

2. ABOUT THE FELLOW

abroad and experience a wide and vibrant range of cultural aspects and food philosophies.

She maintains strong relationships with local and international industry, working collaboratively and developing with them a strong and active network. Their input ensures an innovative training program through currency and sustainability of required skills for the future generation of Pastry Chefs in our global and ever-changing industry.

In her spare time, Tsimiklis enjoys organic gardening, reading philosophy, international cultural travel, meeting new people and experiencing the glorious live events and the vibrant food and music culture for which Melbourne is world-renowned.

3. AIM OF THE FELLOWSHIP PROGRAM

The aim of this Fellowship was to study at first hand the advanced skills and cultural aspects of artisan gelato making and to introduce structured training into the vocational education sector and Australian community and make accessible and address an identified skills gap.

Ongoing Areas of Development:

- Influence professional vocational delivery of gelato skills within SIT30813 Commercial Cookery and SIT40713 Patisserie accredited qualifications and Training Packages.
- Liaise with international networks to collaborate globally towards a world standard of Gelato training.
- Consult with local industry and provide expertise through acquired skills and knowledge.
- Promote Artisan Gelato Making as a unique specialist skill.
- Establish gelato making as an authentic career option and create training courses through industry consultation, with a focus on high-level, artisan gelato making.
- Investigate, collate and promote information on the certification by the Australian Government on gelato making specialist skills.
- Develop strategies to promote to consumers the benefits of authentic, artisan gelato production using fine, natural ingredients compared with the mass-manufactured gelato product and its chemical and other additives.

4. THE AUSTRALIAN CONTEXT

The State of Victoria is proud of its vibrant Italian community, which maintains a strong pride and affinity with fine Italian culinary culture and cuisine. As a key element of this culinary tradition, gelato making has been with us on a smaller scale for many years, but the growing demand resulting from increasing culinary awareness and respect for fine ingredients and flavours has outgrown the capacity of the local gelataria and now gelato has established itself in leading restaurants, hotels and specialist gelaterias throughout Australia.

In the past twenty years there has been a significant increase in the number of Artisan gelato retail outlets in Australia and there has been a consistent growth in their numbers over the past five years. This growth is particularly observed through franchise expansion in regional areas that has ensured the industry now reaches a larger market and offers a wider range of diverse gelato products.[1]

For example, the franchise Gelatissimo targets the quality end of the gelato market, offering customers a high-end premium product. Additionally, Gelato makers Gelato Messina, have been recognised as being at the forefront in the production and offering of premium, artisan gelato creations.[2] Chef Donato Toce from Messina Gelato states he creates gelato for an increasingly educated Australian consumer who now looks for, expects and prefers to consume premium gelato and frozen dessert products. This strong interest has resulted in the increased expansion within the industry of new high-quality gelato enterprises extending to all major cities and regional towns across Australia. This upsurge corresponds to the demand by industry for skilled, artisan "gelatieri" who can produce and maintain the integrity of the traditional varieties of gelato while introducing the more inventive techniques and flavours to satisfy our discerning population.[3]

Min Chai, co-owner of N2 Extreme Gelato, a proprietor with retail gelato outlets in Sydney and Melbourne, has expressed the view that we are becoming more sophisticated when it comes to what we look for in a good gelato, "For far too long people have been served gelato with artificial flavours and colouring but now I think people are looking for products with real ingredients and honest flavours".

Lisa Valmorbida, who runs Pidapipo in Carlton, in Melbourne's inner-north, agrees, "Gelateria are everywhere in Carlton and numbers are growing throughout Australia". Lisa, who studied at the Carpigiani Gelato University, was actually surprised that understanding artisan gelato construction was really complicated. Lisa states, "It wasn't just chucking ingredients into cream". The expertise in mastering the science and maths behind balancing the recipes and getting everything perfect was something she had not expected.[4]

Specialist gelato maker Massimo Bidin offers an authentic taste of Italian Gelato at Gelateria Primavera, Melbourne. Massimo explained that artisan gelato uses quality natural ingredients and implements traditional production methods during construction of the product. Massimo controls all aspects of his recipes and methodologies, dismissing any short cuts or substitutions, thus achieving an authentic food product that draws from the time-honoured traditions of Italy. Massimo

Massimo Bidin, Gelateria Primavera, Melbourne CBD.

1 Fritz Gelato, http://www.fritzgelato.com; Gelateria Cremona in Paddington, Brisbane, QLD; Pidapipó Gelato, http://www.pidapipo.com.au.;Gelato Messina, http://www.gelatomessina.com and Ice Cream Stores in Australia Market Research | IBISWorld.

2 Gelatissimo information sourced from Gelatissimo website http://www.gelatissimo.com.au.

3 Interview with Donato Toce 10/04/2015.

4 Nitro Lab, CBD, Melbourne - Urbanspoon/Zomato. 2015. Nitro Lab, CBD, Melbourne - Urbanspoon/Zomato http://www.urbanspoon.com/r/71/1779829/restaurant/CBD/The-Lab-Nitrogen-Gelato-Melbourne.

expressed the view that there is a skills shortage of qualified and experienced gelato makers in Australia and he indicated that the staff he employs have to be trained in all production aspects the workplace.[5]

Vocational Training in Australia

Australian vocational educational training institutions currently do not offer professional gelato training. This equates to inadequate opportunities for Australians to be trained locally and gain their credentials to facilitate industry requirements. Consequently, professional gelato makers are sourced from overseas, predominantly Italy, to fulfil this skills gap within local gelato businesses. This missing training provision is significant because of the growing deficiency of skilled labour and an existing gap continues to grow.

Registered training providers in Australia delivering the SIT40713 Patisserie and SIT40413 Commercial Cookery qualifications do provide students with limited opportunity to gain some knowledge and skills of frozen desserts. It is, however, evident that these qualifications cannot provide the depth of knowledge and skills required to facilitate the level of professional expertise required by industry. This means if a student wishes to pursue a career as a professional gelato maker they need to obtain these skills by either travelling overseas and training or alternatively, learning via the expertise and experience of an Italian-trained gelato chef in the workplace. Workplace training is predominantly the only accessible avenue for gelato makers to be trained here in Australia acquiring no certification. Further, Australia will continue with the practice of sourcing skilled artisan labour from overseas to address our skills gap deficiency arising from the expansion of our growing gelato market.

The Australian Gelato Industry Emerges in the Global Market

The State of Victoria received recognition for its reputation as a national and international culinary region, and in recognition of our growing gelato culture Melbourne proudly accepted the invitation to join eight other world-wide locations – Rome and Rimini (Italy), Valencia (Spain), Berlin (Germany), Austin (USA) and Dubai (UAE), Sao Paulo (Brazil) and Shanghai (China) – to host and participate in the 2013/2014 World Gelato Tour.

Two Sydney gelato artisans won this prestigious event and received the Gelato World Tour title in Rimini, Italy in September 2014. This competition seeks to identify the world's best gelato after many elimination processes throughout the world. Gelato artisans John and Sam Crowl from the Cow and the Moon Gelato and Coffee Bar in the suburb of Enmore, Sydney, Australia competed against twenty-three other gelato artisans, winning the title with their Mandorla Affogato gelato flavor which was acclaimed as World's Best Gelato in 2014.[6]

Messina Gelato Melbourne

5 Interview with Massimo Bidin 17/12/2015.

6 Sydney's Cow and Moon, information sourced from http://www.goodfood.com.au/good-food/food-news/sydneys-cow-and-moon-

48 flavours Asia Pacific finals gelato world tour award.

Cow & Moon, Enmore, Sydney.

named-worlds-best-gelato-makers-20140908-3f2c0.html

4. THE AUSTRALIAN CONTEXT

The Gelato World Tour 2015 was recently held in Singapore at the Marina Bay Sands Hotel and Resort in March. This three-day event hosted gelato teams from the Asia-Pacific region, attracting an estimated 50,000 gelato professionals and enthusiasts. An Australian trio was successful at this event, qualifying for the right to compete at the Grand Final. Gelato makers David Lamprell, Michael O'Donnell and Brian O'Donnell (48 Flavors in Adelaide) were awarded Second Place for their Roasted Walnut and Honey Crunch flavored gelato. The trio will compete against other gelato teams from around the world in the Italian city of Rimini in 2017.[7]

The recent successes of current Australian gelato chefs have demonstrated that once Australian chefs are trained in the vocation that they wish to pursue as a career they can compete with the best gelato chefs in the world.[8] The instrumental point here is developing a sustainable industry in Australia that furnishes international competitive skill set provides opportunity and enables our local industry flourish filling and developing local workers. The current option of continuing to import skills may still be needed in the short term however identifying and closing skills deficiencies in our community is vital and federal government intervention is necessary to provide infrastructure that facilitates and closes the gap on this current skill deficiency.

Australia needs to generate and sustain unique knowledge, skills and understandings. Strong growth in the industry dictates that Australia should no longer need to rely solely on overseas chefs sharing their skills and knowledge. The current market demands the design and innovation towards national accredited training programs; promoting this unique skill set and it must be accessible through nationally accredited training.

7 Gelato World Tour - Press releases 2015. Press releases - Home. http://www.gelatoworldtour.com/press/press-releases-2/.

8 Gelato World Tour - Press releases 2015. Press releases - Home. http://www.gelatoworldtour.com/press/press-releases-2/

5. IDENTIFYING THE SKILLS AND KNOWLEDGE ENHANCEMENTS REQUIRED

There are examples of areas in Australian industries and education where there are weaknesses in innovation, skills, knowledge, experience, policies and/or formal organisational structures to support the ongoing successful development and recognition of individuals and the particular sector.

The focus of all ISS Institute Fellowships is on applied research and investigation overseas by Australians. The main objective is to enable enhancement and improvement in skills, knowledge and/or practice not currently available or implemented in Australia and the subsequent dissemination and sharing of those skills and recommendations throughout the relevant Australian industry, education, government bodies and the community.

Currently there are limited formal training courses in Australia designed to develop and produce skills in artisan gelato construction. This highly limited specialised skill set must be available nationally to enable a sustainable platform for future enterprises and to meet current industry demands

This Fellowship provided Tsimiklis with an opportunity to study gelato science, production and history. Specifically, it allowed her to address the identified and necessary skills enhancement areas and to examine the following areas of knowledge and practical application.

The enhancement of skills and the application of the Fellowship will be applied from the research discussed within this report in the following contexts:

5.1 Record and investigate Gelato making in Italy through new methodologies, traditional practices and innovative techniques, for the purpose of understanding and constructing knowledge:

- Identify contemporary and traditional best practices to gain a sense of cultural tradition
- Research historical recipes associated with traditional and modern Gelato making
- Understand and record the evolution of ingredients from traditional to modern Gelato recipes
- Compare and analyse Italian Gelato making practices that influence the Australian context
- Undertake training focused on the cultural, regional and seasonal influences on artisan Gelato as a food that respects the fine traditions associated with this unique, Italian culinary specialty.

Outcome:

- Document Gelato making methodologies relating to traditional and contemporary Gelato making processes by identifying the modification of ingredients, processes and historical influences.

5.2 Identify and record detailed theoretical aspects of producing industry-standard Gelato and frozen desserts in Italy:

- Investigate and compile modern theoretical practices during the production of professional Gelato and frozen dessert making
- Appraise and differentiate between historical Gelato traditions and the evolution of emerging trends, from an Italian cultural perspective
- Record and clarify processes that ensure food safety standards of Gelato products and production with observance of food safety and food storage guidelines
- Determine and analyse how Gelato is emerging into contemporary plated desserts and how this can be incorporated into vocational education
- Compare and analyse theoretical aspects of Gelato making between various culinary institutions

5. IDENTIFYING THE SKILLS AND KNOWLEDGE ENHANCEMENTS REQUIRED

- Investigate innovative production techniques and ingredients addressing nutritional, biological and special dietary varieties that meet current consumer demands and dietary requirements.

Outcomes:

- Record detailed theoretical knowledge and processes that are essential in the safe handling of Gelato and frozen dessert production to produce an optimum product
- Based on this research, develop a list of procedures for best practice in application of theoretical aspects during the production of professional Gelato and frozen dessert making
- Improve the Fellow's current Patisserie skills and knowledge through continuous improvement to upgrade specialist skills in the field of artisan frozen dessert techniques.

5.3 Record and determine the equipment required and used during the production of international contemporary Gelato and frozen dessert making:

- Identify and document contemporary Gelato making equipment utilised in the production of emerging Gelato trends and techniques
- Investigate new processes of molding Gelato into silicone molds for the production of individual plated serves
- Identify additional equipment required to decorate Gelato for contemporary presentation
- Compare purpose-built items of storage/presentation equipment required to maintain and present Gelato
- Identify leading Gelato specialists' preference of equipment, to understand how they achieve various product outcomes utilising a range of specialist equipment items.

Outcome:

- Record and observe the items of specialist equipment utilised during the Gelato training course and identify the significance of this equipment's function and purpose.

Identifying the necessary Skills Enhancement areas will therefore be a major focus of this Fellowship research during the following activities:

- Investigate the relationship between culinary education in Italy and local Industry and how the two work together to develop initiatives that support ongoing business development of Italian artisan Gelato enterprises
- Examine international gelato networks working together to market their specialised food product, whilst achieving a unique international-inspired Gelato specialised food item
- Compare Australian artisan Gelato businesses to the Italian market and determine the variables in flavor and construction. Examine the emergence of Gelato applications within the Australian hospitality sector.

6. THE INTERNATIONAL EXPERIENCE

Carpigiani Gelato University, Bologna Italy

The Fellowship provided a unique opportunity to travel to Italy to study the advanced skills and cultural aspects of artisan Gelato making at the internationally recognised Carpigiani Gelato University in Bologna, Italy. On completion of the intensive training at the Carpigiani Gelato University and the associated assessments and examination, a specialist Gelato internship was completed at a local gelateria in Bologna, providing a valuable opportunity to work within a specialist industry under the close supervision of a University-affiliated Gelato specialist.

Students working in Carpigiani University Gelato class

6. THE INTERNATIONAL EXPERIENCE

Daniela Galdi and staff at the Italian Chef Academy, Rome

On completion of the formal study, internship and associated activities, the research continued through site visits to meet Gelato artisans and culinary educators in the main Italian regional cities of Venice, Verona, Florence, Rome, Parma and Milan. A structured program of site visits provided a deep understanding and appreciation of the proud traditions, cultural significance and regional variations of artisan Gelato making, including the strong affinity with and respect of the product by the people of Italy.

This rich and varied experience provided a deep understanding of how Italian artisan Gelato construction is educated and delivered throughout the Italian community.

Artisan Gelatieri / Industry Site Visits

La Sorbetteria di Castiglione (left) and Cremeria Funivia (right)

Venice

- La Boutique del Gelato, Salizzada San Lio, 5727, Castello, Venezia
- Gelato Fantasy, Calle dei Fabbri, 929, S.Marco, Venezia
- Gelatoteca SuSo, Calle della Bissa, 5453, 30124 San Marco, Venezia
- Gelateria Ca' d'Oro, Str. Nuova, 4273/b, 30131 Venezia
- Alaska, Calle Larga dei Bari, 1159, 30135 Venezia
- Grom, 3006 S. POLO, Venezia, VE 30125

Bologna

- La Sorbetteria di Castiglione, Via Castiglione, 44 d/e, Bologna
- Gelateria Gianni, Via Monte Grappa, 11, 40121 Bologna
- Cremeria Funivia, Piazza Camillo Benso Conte di Cavour, Bologna
- Gelateria Stefino, Via S. Vitale, 37, 40125 Bologna
- Gelateria Primo Latte, Via Azeglio, 1D, 40123 Bologna
- Carpigiani Gelato University Bologna- via Emilia ponente, 45, 40011 Anzola dell'Emilia

Parma

- Gelato Festival 2015
- Emilia Cremeria, Str Luigi Carlo Farini, 29, Parma

Verona

- Gelateria Savoia, Via Roma, 1b, 37121 Verona
- L'arte del Gelato, Via Leoni, 3, 37121 Verona
- Gelateria Patagonia, Via Mazzini | Uberprufen, 37122, Verona

Florence

- Gelateria Edoardo, Piazza del Duomo, 45R, 50122 Firenze
- Gelateria Artigianale La Strega Nocciola, Via de Bardi, 51/red, 50125 Firenze
- Gelateria Cantina del Gelato, via de Bardi, 31, 50125 Firenze
- Stickhouse, Il Gelato artigianale su stecco, Via Antonio Giacomini 9A, 50132 Florence
- Cantina del Gelato, via de Bardi, 31, Florence
- Venchi, Via Calimaruzza, 18 Angolo Piazza Del Mercato Nuovo 6/7, 50123, Florence

Rome

- Frigidarium, Via del Governo Vecchio, 112, 00186 Roma
- Gelateria del Teatro, Via dei Coronari, 65/66, 00186 Roma
- San Crispino al Pantheon, Piazza della Maddalena, 3, 00186 Roma
- Giolitti, Via degli Uffici del Vicario, 40, 00186 Roma
- Carapina, Via dei Chiavari, 37, 00186 Roma
- Gelateria I Caruso, Via Collina 13/15, 00187 Roma

Frigidarium, Rome (top) and Giolitti, Rome (above)

6. THE INTERNATIONAL EXPERIENCE

- Flor Gelato, Via Cavour, 337, 00184 Roma
- Fatamorgana, Via Roma Libera, 11 Piazza San Cosimato 00153 Roma
- La Fonte della Salute, Via Cardinal Marmaggi 4, 00153 Roma

Sharing the Intensive Knowledge and Practical Experience

The Fellow's Gelato classmates - week one

A Passion to Train as a Future Artisan

Attendance at the prestigious Carpigiani Gelato University in Bologna provided a unique experience in all aspects of artisan Gelato manufacture. The valued experience and privilege of working under highly skilled culinary instructors, each of them internationally-recognised experts in Gelato education, across four weeks of intensive instruction, cultivated an appreciation of the art and science of artisan Gelato production and construction. At the conclusion of the formal course of study, a one-week internship was undertaken in an affiliated commercial retail gelateria, consolidating the hands-on training in Gelato making and bringing together all the theoretical and practical aspects that had been learned over the previous four weeks of study.

6. THE INTERNATIONAL EXPERIENCE

Stefano Tarquinio, Angela Tsimiklis

The education received from the instructors at the Carpigiani Gelato University provided inspiration for the Fellow in her role as an instructor in the Australian VET educational sector. The University's highly-skilled instructors possessed a significant depth of knowledge and demonstrated a professional understanding in a single specialist subject. This is something vocational training in Australia is not known for. Additionally the Instructors' training provided a clear insight as to why Italy is home to so many well-trained, highly skilled specialists in artisan Gelato making.

The University's instructors informed me that in addition to training international students, they also trained the local vocational culinary students who, under the Italian vocational educational system, completed the first two weeks of the artisan gelato program as a part of their Patisserie qualification. This commitment to developing and delivering a high standard was also impressive and inspiring as the instructors demonstrated strong cultural respect for Patisserie training in Italy and displayed a high level of pride in the evolution of their iconic food products. Artisan gelato making, for these instructors, is focused on natural ingredient quality, seasonality and region, adhering to processes that achieve a quality product that recognises and acknowledges the traditional and cultural aspects of Gelato.

6. THE INTERNATIONAL EXPERIENCE

Gelato Instructors Stefano Tarquinio, Luisa Fontana and Angela Tsimiklis

The International Student Experience

An important aspect of the training experience was the nationality of students also undertaking the course. These students had journeyed from all parts of the world including Spain, Slovenia, Peru, Singapore, Canada, Philippines, Taiwan and two other Australian students – all in attendance to develop their skills in Artisan Gelato making.

When asked why they had traveled so far for their education they cited the lack of educational facilities in their home countries that had limited their ambitions and the possibility of obtaining expert knowledge. They perceived Italy as being the only option for obtaining a quality training and educational experience in artisan Gelato making.

The instructor informed us that many people open up gelaterias with very limited management and business operation capabilities. They also possess very limited knowledge of the science and function of ingredients that prevents them from producing a true artisan product and experimenting with new recipes. Instructor Stefano Tarquinio stated that many people establish a gelateria thinking that it is only a matter of mixing some ingredients and freezing them, but this is far from the reality.

To obtain the necessary skills and knowledge, the following training was undertaken during the course of the Fellowship.

The Fellowship was instrumental in providing advanced level training with continuous improvement to upgrade existing specialist skills in the field of artisan frozen dessert techniques. The four weeks of training at The Carpigiani Gelato University encompassed intensive, artisan frozen dessert construction and detailed theoretical aspects of producing frozen desserts. The training focused on international

and emerging trends and modern techniques, providing expertise and intensive knowledge of quality ingredients together with the use of the high-level, international-standard equipment that is essential to the production of a premium, world-class product.

Throughout the regions visited across Italy, production techniques are inclusive of ingredients that address nutritional, biological and special dietary varieties, meeting contemporary consumer demands and dietary requirements.

Comparison of the Italian and Australian production techniques and processes has provided inspiration to return to Australia with a personal and professional commitment to developing and introducing to Australian industry all aspects of the Italian experience. The intensive training and industry experience provided by the Carpigiani Gelato University, Bologna, Italy, combined with a high level of professionalism and education excellence has now made possible the sharing of these specialist skills and knowledge of Advanced Level Gelato expertise.

The Gelato training that encompassed key elements of cultural and traditional understanding and international currency will support the development of valuable training programs designed for Australian vocational students, instructors, industry and the wider community. The long-ranging benefits of this project will include the development of Gelato and Patisserie industry networks and the establishment of recognised professional, specialist gelato training programs.

Education is considered as the best means of advancing specialist skills and an enthusiastic and interested core group of culinary educators and industry professionals throughout Australia will embrace this direction. William Angliss Institute, with its highly skilled professional instructors, state-of-the-art Carpigiani Gelato-making equipment and well-equipped facilities offers an excellent level of professionalism and support in providing an appropriate training base for delivery of artisan Gelato and specialist frozen dessert training within Victoria and Australia.

What Defines Artisan Gelato?

Gelato cabinet

The technical definition of Artisan Gelato is defined by internationally-renowned gelato maker, Donata Panciera, as “a partially frozen foam composed of air bubbles, fat globules, ice crystals in which three physical states (solid, liquid and gaseous) coexist due to the merged ingredients acting as emulsifiers and stabilisers”.[1] This frozen foam is skillfully developed through a systematic production process.

An additional emotive definition is a semi-frozen natural food produced through the skills and knowledge of an Artisan Gelato Maker. It is the maker who totally controls the selection, balancing and processing of ingredients and whose heart and soul is reflected inside their gelato cabinet.

1 Panciera D, 2013. Information sourced from “Italian Artisanal Gelato According to Donata Panciera”.

6. THE INTERNATIONAL EXPERIENCE

Understanding Artisan Gelato!

To understand the attributes of Artisan Gelato it is important to consider three main attributes: the maker, the ingredients and the process. Other (but by no means lesser) considerations include the storage temperatures; its texture, pliability; and the individual craftsmanship of combining and balancing selected ingredients to produce small batches of a unique semi-frozen food. Artisan Gelato is essentially a food product that is nutritionally good for you and provides an enjoyable experience.

In Australia, Gelato is sometimes interpreted and defined as Italian ice cream and this notion is understandable, as the organoleptic properties of both of these products are quite similar. The reality is these products have many distinct variables and within this report will be highlighted the qualities that make Artisan Gelato a unique and quality food product that results from the high skill level required to construct and produce a quality artisanal product.

An understanding of these variables will provide industry with a stronger appreciation of an iconic food product with a wide variety of applications. Researching traditions in Gelato construction will enable this report to identify and outline Artisan Gelato construction as a unique trade skill. From this understanding it is recommended the Australian Government recognises Australia's unique food industries and the artisan value and attributes associated with the craftsmanship of Artisan Gelato making. Consideration should be given to broadening the skills of Gelato making and recognising this as a highly desirable specialist skill that requires a formal certification in these specialist skills that is recognised across industry and the broader Australian Community.

A Brief Comparison of Artisan Gelato and Ice Cream

The processes and ingredients of Gelato construction can determine the variables of the final product. Artisan Gelato and Ice cream, both ice confections, are very different food products. Australia and countries including the United Kingdom (UK) and the United States of America (USA) have food standards that require a minimum fat content of 10 per cent to be recognised and sold as ice cream. Artisan Gelato has an average fat content of between four and eight per cent and it would be the exception to the rule for this product to ever reach a 10 per cent fat content.[2] This fat content alone is one of the significant indicators of the difference between Artisan Gelato and Ice Cream.

The production methods of the two products also differ: Artisan Gelato is made in small batches using the best natural seasonal ingredients or ingredients that have been impeccably preserved when they were in season. Artisan Gelato is a food product that is unique, fresh and not designed to be kept for long storage periods and is best consumed within several days of production.

Artisan Gelato characteristically contains significantly less air than Ice Cream, resulting in a denser product and presenting with a creamier mouth sensation. During production, an overrun occurs in the batch freezer as a result of the machine's combined freezing and churning actions that introduce air into the product. The average incorporation of air into Gelato during production is between 25 per cent and 30 per cent, whereas in Ice Cream during similar processes the air introduction is generally 35 per cent and higher. Generally, the larger production runs of Ice Cream tend to have the highest level of air incorporation, which can exceed 50 per cent.[3]

The air incorporated into Artisan Gelato and Ice Cream also impacts the storage temperature of these food products. Artisan Gelato is stored and served up to six degrees Celsius higher than Ice Cream allowing the consumer to experience a cleaner, fuller perception of ingredient flavours and textures.[4] The higher air incorporation of Ice Cream requires a colder temperature to hold the form of the product

2 Palumbo, 2015. Information sourced from "Gelato Messina: The Recipes". Hardie Grant Books.

3 Carpigiani 2015 - Information sourced from Carpigiani Gelato University course May 2015.

4 Luciano 2011. Information sourced from "Gelato and Gourmet Frozen Desserts , A professional learning guide".

as air does not freeze, therefore, the micro air bubbles need to be stabilised at a lower freezing point. Artisan Gelato is generally served at between minus 12 to 14 degrees Celsius, compared with Ice Cream served at minus 18 degrees Celsius.[5]

In Italy, Artisan Gelato is readily distinguishable by its soft, dense creaminess and the flavours of its fresh ingredients. It is considered as a delicious and healthy treat.

The Evolution of Artisan Gelato Making

From a sweet treat enjoyed by the aristocracy to the food of the people, the journey of Artisan Gelato has evolved throughout history to a point where today it is a recognised cultural and traditional frozen food specialty product. Gelato-type products, in various forms, have been recorded throughout the centuries. The recipes and processes used in modern Gelato manufacture are a result of the evolution of an ancient product into a product adapted to today's cultural and gastronomical tastes through developing processing, new technologies and traditional and innovative ingredients.

The timeline of gelato evolution provides an historical understanding that clearly indicates the progression and development of the frozen product that consumers have been enjoying for centuries. Through many historical influences and evolutionary recipes, our contemporary society views Artisan Gelato as a handcrafted food product and as a pleasurable and affordable luxury frozen treat.

Timeline of Gelato Evolution

13th Century AD	16th -18th Centuries	19th- 20th Century	1900 -1950	1950 -1985
From snow wells to sorbet	Gelato and the birth of a noble trade	Ascent and global diffusion of gelato	From ice and salt methods to new technologies	Gelatieri and Manufacturers unite

Snow and ice formed the foundation of gelato. The earliest form of the naturally produced product was ice or snow-based and it was sweetened with sugar syrup and natural flavours. Sugar syrup is the fundamental ingredient of today's Sorbetto, a fruit flavoured ice confection and a pre-cursor of Gelato. Sorbetto differs from Gelato in that it contains no dairy product.

Syrup is made with two key ingredients – sugar and water. The first known written recipe for sugar syrup appears in ancient recipes as far back as the 11th Century, noted in ancient documents as "shrb". History records that ice drinks were made not simply cooled with ice or snow but also with a mixture of sugar syrup and mashed fruit. These ingredients were placed into a container that was then immersed in ice and salt, creating the earliest known freezing process. The contents of the container were stirred while this freezing process was transforming the contents into the earliest known frozen Sorbetto. The endothermic process of adding salt to ice has been recorded in several early medical journals and was noted as having been utilised for centuries in the production of frozen sweet ices for consumption, nutrition and enjoyment.

It soon became evident that sugar was the key ingredient that enabled the creation of refreshing, sweet flavored ices that could be held below freezing point. The construction of sweet frozen ices was perceived as a noble trade and artisan skill during the Renaissance period in Italy. Aristocrats throughout Europe courted these artisans who knew how to manipulate food at sub-zero temperatures in the 16th Century. Florentine Alchemist, Cosimo Ruggieri, created the first dairy Gelato for Catherine de' Medici in Florence and as such, the city of Florence is attributed by historians as the true birthplace of Artisan Gelato.

5 Carpigiani 2015 - Information sourced from Carpigiani Gelato University course May 2015.

6. THE INTERNATIONAL EXPERIENCE

Gelato became the food for the people when Sicilian-based Francesco Procopio Cutò made Gelato available to all when he traveled to Paris and opened Café Le Procope in 1686. This period was a time of change and transformation for Gelato, as suddenly a food notably reserved for the rich became accessible and consumed by many across Europe. Also in the 17th Century Italian Bernardo Buontalenti invented the first egg cream Gelato, which achieved further fame when Italian Gelato makers Francesco Redi and Lorenzo Magalotti recorded their ingredients and produced the first true Gelato recipes.[6]

Other Notable Events During the Gelato Evolution Timeline

- In 18th Century France, philosophers and writers Denis Diderot and D'Alembert dedicated a noun "glace" (Gelato) in their encyclopedia.
- Italian Professor of Medicine Filippo Baldini described Sorbetto as the product of pure reason and prescribed Sorbetto for all known illnesses because the sugar, salt and cold were considered to have positive effects on the human body.
- Italian Giovanni Bosio travelled from Genoa to New York and opened there in 1770 the first Gelateria in America.
- In 1903, Italian Marcioni patents the first cone mould, which he invented in 1896.
- In 1927, Italian manufacturer, Otello Cattabriga, invented a machine with an automatic mechanical system that replicates the technique of producing Gelato typically used in the manual system.
- In 1946 the Carpigiani brothers in Bologna develop a gelato machine prototype called 'autogelatiera', an automatic gelato machine. Italy is currently the home to the world's largest manufacturers of gelato machines and products.[7]
- In contemporary society we are now equipped with a growing industry that is facilitated with state of the art machinery utilised by experts throughout the world, who are leading change in consumers' choice and perception of Gelato.

These points clearly demonstrate that Artisan Gelato is not just a current trend emerging in the Australian market, but is a product that has been evolving globally for many centuries. An expansion of skills and knowledge is required worldwide to meet the growing consumer demand for a naturally healthy food product that can also be enjoyed as a sweet treat.

6 Gelato Museum Carpigiani 2015 - Information sourced from records and notes diplayed at the Gelato Museum Carpigiani, Bologna , Italy.

7 Gelato Museum Carpigiani 2015 - Information sourced from records and notes diplayed at the Gelato Museum Carpigiani, Bologna , Italy.

Artisan Gelato Making - New Methodologies, Traditional Practices and Innovative Techniques

Balancing Ingredients into Artisan Gelato

The training delivered at Carpigiani Gelato University provided an understanding of the fundamentals of ingredients and the specialist machinery utilised in gelato construction. The training also focused on the important aspects of hygiene and food safety when working with foods at sub-zero temperatures. Gelato specialist instructor, Stefano Tarquinio, explained that by following correct processes, formulating Artisan Gelato is not particularly complex as it involves only a small quantity of compound ingredients and raw materials.

The complexity of Gelato construction is in the composition and balance of the ingredients and their interaction with several ingredient and component parameters: sugars, fats, proteins, solids and water. It is important to note that when referring to water or sugar, these are also found in other ingredients, for example, fruit and milk and these are key aspects of achieving a balanced recipe. Understanding the parameters and technical aspects in artisan Gelato construction requires the skill and knowledge of the Gelato maker in balancing their ingredients to create a semi-frozen product that is a true Gelato with the required attributes of stability, texture and flavour.

Carpigiani Gelato University, in partnership with the University of Bologna, continually seeks to improve the stability of Artisan Gelato through new ingredients and technologies. Both Universities have worked together to conduct research into the water component of Gelato. Water is the only ingredient in Gelato that freezes and Carpigiani Instructor, Stefano Tarquinio, explained that care needs to be taken in the construction of Gelato to ensure that the water particles are smoothly integrated with the other ingredients, thus preventing the formation of micro ice particles and ensuring a smooth Artisan Gelato. The training at the Carpigiani Gelato University teaches as a fundamental principle the importance of following the parameters to achieve a balanced recipe that is free from ice particles.

Appendix 10.1 provides information detailing the determined parameters for optimal gelato construction.

The Influence of Sugars

Another key ingredient in Artisan Gelato is sugar. Sugar in a variety of forms, is incorporated into Artisan Gelato recipes for its sweetening power, the effect on other ingredients (depending on which type of sugar is used) and importantly, its anti-freezing properties.

Sugar enhances the sweetness of the other ingredients within the gelato construction and ultimately, the final product. Within the gelato construction, the main purpose of sugar is that it contains properties that prevent water from freezing, lowering and controlling the freezing point within a solution. Sugar helps to achieve the perfect structure, controlling the stability of 'lifespan' of the Gelato, determining serving times and duration in chilled storage and display cabinets.

Appendix 10.2 details six main sugars used in gelato making.

The challenge for the Gelato maker is to determine the type of sugar to use within a recipe and in what proportions. This decision will impact on the anti-freezing properties and the consistency of the final Gelato product. The Gelato maker must carefully calculate the quantity of total sugars, importantly, including naturally sourced sugars in other ingredients. Sugars used in Gelato construction are selected for their various characteristics: being less or more sweet, their measure of anti-freezing properties and how they assist with the balancing and binding of other ingredients.

This small insight into the use of various sugars in Gelato construction is important. When developing Gelato recipes, it is this balancing that will determine the temperature at which the Gelato will be served

for either a restaurant service or stored and displayed in a retail shop display cabinet. If the storage cabinet in a gelato retail outlet is maintained at a serving temperature of minus 14 degrees Celsius, then all that gelateria's gelato recipes will need to be constructed and contextual in accordance with this serving temperature. A failure to observe the precision of balancing these ingredients will result in a variance of a product that is either too soft or too hard. This same principle also applies to restaurants where commercial kitchen freezers are usually maintained at a temperature of minus 18 degrees Celsius. Therefore, the same recipe used at minus 14 degrees Celsius would require an adjustment to the sugar or water content to achieve the same taste, structure and ease of handling for service.

This is where the art of Gelato construction becomes Artisanal. The main ingredients selected for the recipe, such as fruit or nuts, require careful consideration and balancing to ensure they must interact with all other components. All ingredients must be calculated individually and combined to align within the required Gelato parameters, thus creating a structurally delicious and true Artisanal Gelato product.

Function of Ingredients – From Traditional to Modern Artisan Gelato Recipes

Since the 1970s, modern ingredients have significantly impacted on and changed the production of contemporary Artisan Gelato. Early Gelato recipes used base ingredients of sucrose, eggs and milk in the construction and in the purity of the product. Artisan Gelato was churned and served on the day.[8] In today's modern society, Gelato makers have available a wide selection of individual considerations. Artisan Gelato makers carefully balance several sugars in their recipes, creating a sugar spectrum with a combination of Sucrose, Dextrose and Dry Glucose Syrup. This combination of sugars helps prevent partial re-crystalisation within the gelato and assists in the product's preservation. Modern sugars have enabled the Artisan Gelato product to remain fresh and stable and able to be consumed for several days after being prepared. Careful and considered sugar combinations allow for the Gelato product to be developed as a sweet treat but also can be balanced to achieve a savory food product or low GI product.

8 Panciera 2013. Information sourced from "Italian Artisanal Gelato According to Donata Panciera".

An important aspect of all Artisan Gelato products is the incorporation of a stabilising ingredient. The introduction of fresh eggs into Artisan Gelato recipes enabled their abundant protein and lecithin content to have binding properties and achieve important stabilising effects in the Gelato base mix. With the introduction of modern stabilisers and emulsifiers, this traditional and natural stabilising ingredient was replaced and enhanced in the 1970s.[9] Modern day stabilising ingredients and emulsifiers are either natural-based or synthetic and these are added to the base mix to assist in the separation and amalgamation of water in the Artisan Gelato product. Stabilising the Gelato allows the product to be served at a warmer temperature and for the product to be maintained over several days in a serving freezer cabinet without loss of consistency.

Emulsifiers are added to Gelato recipes to aid the combination of fats and water, thus achieving a creamy and smooth product.[10] Emulsifiers and stabilising ingredients are used in very minute dosages and there are many kinds of stabilisers and emulsifiers on the market. It is important that these products are used correctly and measured accurately, as individually and according to the other ingredients these often require individual activation. This particularly applies in the production of dairy, non-dairy, hot or cold mixes and fruit with high acid. While each stabiliser and emulsifier has its own important characteristics that make it unique in the Gelato recipe, not all emulsifiers and stabilisers are suitable for all Gelato recipes. Other considerations include additional ingredients or processes that may be selected to activate a particular stabiliser or emulsifier for its desired purpose. The Artisan Gelato maker must therefore decide on a complex recipe combination of quantity, process and accurate ingredients in order to achieve a desired final product with the attributes of Artisan Gelato.

Preparation of Contemporary Artisan Gelato

In the preparation of contemporary Artisan Gelato there are essential points that must be followed to achieve exceptional results. These include:

1. Selecting quality ingredients for nutrition, taking into consideration seasonality, organically grown and sourced through regional providers
2. A well-balanced recipe that is appealing to consumers, for example, in the north of Italy people generally prefer a creamier Gelato product, whereas in the southern regions of Italy, a sweeter and fruitier variety of gelato is enjoyed
3. The Gelato is produced, stored and served in compliance with local Food Safety Standards
4. Selection of the correct preparation techniques and methodology through the safe and skilled usage of specialised Gelato making equipment
5. Control of the working and storage temperatures of the Gelato
6. An understanding of consumers' special dietary requirements and food intolerances
7. An Artisan Gelato maker must be conversant with the preferences of their customers, for instance whether the customer prefers a colder or a sweeter product. A customer's sensitivity to their region, climate, the season and the locality or country in which the Gelato is produced. Such local preferences determine what is perceived as a "good" Gelato

9 Luciano 2011. Information sourced from "Gelato and Gourmet Frozen Desserts , A professional learning guide".

10 Palumbo 2015. Information sourced from "Gelato Messina: The Recipes". Hardie Grant Books.

6. THE INTERNATIONAL EXPERIENCE

Important Gelato Processes

A fundamental process in Gelato construction is the pasteurisation and ageing of the base mixes. The pasteurisation process is an essential stage of production as it ensures dangerous bacteria is reduced to safe levels in the mixture. It also guarantees that all added powders have been dissolved, heated and mixed thoroughly throughout the mix. This is particularly applicable to milk and cream products.

The chart below [11] demonstrates four variables in pasteurisation. Depending on the ingredients, an applicable process is applied. During these processes it is important that the product not only reaches the required temperature, but that the rapid cooling down of the mixture to four degrees Celsius occurs within the hour. This ensures a safe storage temperature for the base mixes and inhibits potential harmful bacteria growth. As this is a fresh product, the base mix needs to be used within 72 hours, after which time the mixture will start to deteriorate.

Low pasteurisation	Heat to 65° C for 30 minutes then cooled to 4°C	Used for Egg bases
Medium pasteuristaion	Heat to 75° C for 15 minutes then cooled to 4°C	Used for Customised Bases
High pasteurisation	Heat to 85° C then cooled to 4°C	Used for Milk Bases
High pasteurisation (Chocolate Base)	Heat to 90° C then cooled to 4°C	Used for Chocolate Bases

11 Carpigiani 2015- Information sourced from Carpigiani Gelato University course May 2015.

Ageing

The following process after pasteurisation is ageing. Product ageing commences once a base mix is cooked and cooled down to four degrees Celsius. Professional Gelato makers will allow their mix to age or become hydrated for at least four hours or overnight. The research conducted at the Bologna University in conjunction with the Carpigiani Gelato University, reveals that after twelve hours the base mix is fully hydrated. During this ageing process, the following physical compound changes occur to the mix:

- Free water is captured and absorbed into the mix. As the ageing processes hydrate the proteins, this compound change binds the proteins to a large quantity of free water within the mix
- During the churning/ freezing process the hydrated proteins hold more air and the Gelato produces a sensation in the mouth of being less cold
- Having less free water in a base mix reduces the formation of ice crystals in the finished product. This ensures a smooth and creamy consistency
- The fats in milk-based gelato are distributed evenly throughout the base. As fats carry flavor within the Gelato, this even distribution increases the intensity of flavor.[12]

On completion of the ageing process, the product base is ready to be used. This is the stage where flavorings are added to the base, the recipe is adjusted and balanced then the final mixture is processed through a batch freezer.

Batch Freezing

Batch freezing is a process that achieves the final transformation of the aged, pasteurised liquid base mixture into the finished Gelato product. This occurs through a process of freezing and mixing the Gelato base mixture inside the batch freezer machine barrel at a consistent speed. A beater with attached blades inside the machine barrel churns the mixture and simultaneously introduces air bubbles. The function of the blades inside the barrel is to constantly scrape the wall of the machine to remove any frozen build-up of product, thus ensuring the consistency of the mixture. The beater also breaks up any ice-crystals that may form inside the mixture as it freezes, thus ensuring ice-crystals remain in the mixture as minute particles. During this process the mixture starts to freeze, trapping the air bubbles that assist in creating a smooth, delicate and creamy Gelato product.

The introduction of modern batch freezers into Gelato production ensures that the Gelato mixture is able to be churned more slowly and may be frozen at a slightly warmer temperature than a traditional ice-cream product. This ensures a softer and texturally smoother finished product. A further important aspect of these modern

12 Carpigiani 2015 . Information sourced from Carpigiani Gelato University course May 2015.

machines is their ability to allow less air incorporation into the mixture, resulting in a denser and more stable product that is able to absorb and maintain intense flavours and ingredients.

Emerging Trends and New Techniques

Stick Gelato

Stick Gelato is a new international concept that creates an all-natural, convenient and easy-to-eat Gelato product molded onto a stick. An exciting innovation of this product is that it can be customised to the consumer's choice, with the ability to dip the product into a variety of additional flavours and ingredient toppings to achieve a unique and individual product. This trend provides the Gelato Maker with an additional rapid turn-over of product as customers are able to select and create their own unique Gelato product. The popularity of the Stick Gelato has increased throughout Italy as an extension of the traditional Gelato product – it offers a timeless, natural product that meets modern consumer demands while catering to all demographics.

Stickhouse gelato shop Italy

Making stick gelato

Liquid Nitrogen

The emergence of Molecular Gastronomy throughout the hospitality industry over recent years has provided new inspiration, techniques and approaches to the production of Artisan Gelato. Traditional Gelato base mixes are now able to undergo a unique freezing process with the use of liquid nitrogen, replacing traditional freezing techniques and equipment.

Liquid nitrogen "flash-freezes" or crystalises the flavored Gelato base mixture at a temperature of minus 196 degrees Celsius. The addition of flavourless liquid nitrogen causes the product to vaporise at the point of contact.[13] The specialised Artisan Gelato is formed when liquid nitrogen is slowly poured into the base mixture during continual stirring in a bench-top mixer. This creates an instantaneous, quick-freezing while the agitation prevents the formation of any ice crystals, allowing for an exceptionally smooth product.

13 N2 2015. Information sourced from website N2 gelato http://n2extremegelato.com.au.

The optimal serving temperature of this liquid nitrogen Gelato product is minus six degrees Celsius.[14] The use of Liquid nitrogen is an exciting development in the creation of quality Gelato due to a requirement for less fat in the base mixture. This process is becoming increasingly applied throughout restaurants and hotels because of its ease of use and the consistent results it achieves. A further benefit of this technique is that less expensive and space-conserving items of equipment such as batch freezers and storage freezers are required in busy commercial kitchen environments. In a fine restaurant environment, this modern process enables a quality option for low volume gelato production a la minute, in particular for precision plated desserts.

Gelato to Accommodate Food Allergies and Intolerances

In today's society the awareness of the quality of the food we consume is highlighted and is important to many consumers. Nutrition and a healthy well-being are central to our food choices and fundamental to consumers who need to be mindful of their health. Artisan Gelato is naturally less sweet than ice-cream and other mass-produced ice confections. Artisan Gelato contains natural ingredients and is considered a healthier food in its pure form.

There is an increase in the number of consumers who are unable to consume the volume of sugars found in Gelato and as sugar is a fundamental product ingredient, Artisan Gelato makers are constantly adapting their recipes to meet the needs of their customers with dietary food intolerances and/or allergies. Gelato makers are developing Gelato recipes that are low GI, lactose-free, starch-free (many Sorbetto varieties) and also cream-based Gelato product using poly-alcohol-based sugars.

Poly-alcohol sugar ingredients are not metabolised in the body like other refined sugars and they are emerging in Gelato production throughout Italy and around the world. These modern sugar varieties are available in various forms and used for their highly adaptable sweetening properties.[15]

Types of Poly-Alcohols Used in Gelato Construction

- Isomalt: This is a sugar alcohol produced from sugar beets and has a low cariogenic impact and rates very low on the glycemic index therefore lessening food's effect on a persons blood glucose (also called blood sugar) level.
- Sorbitol: This sugar contains 40 per cent less calories in equal weight to sugar. It is a sugar sourced from Sorbus fruits by example Whitebeam (Sorbus aria), Korean Mountain Ash (Sorbus alnifolia), American Mountain Ash (Sorbus Americana), Rowan or European Mountain Ash (Sorbus aucuparia).
- Maltitol: This is a sweetener that has a calorie and glycemic index almost half of sugar but the same sweetness. This product is sourced through the industrial processing of malt.
- Erythriol: Is a sugar commonly used in savory gelato production and is naturally present in fruits and fermented foods. It has zero calories and no after taste.
- Xylitol: Is commonly known sugar used in the production of sugar free gums and chocolate. This sugar is known as a wood sugar sourced from natural plants such as Birch, cereals and fruits.
- Stevia: This plant-based sugar contains substances that are 300 times more effective as a sweetener than sugar. Due to its sweetening capacity Stevia would need to be combined with other polyalcohol's to achieve the desired sweetening effect and structure of the Gelato.[16]

The challenge in using poly-alcohol products surrounds the laxative effect that some of these sugars

14 N2 2015. Information sourced from website N2 gelato http://n2extremegelato.com.au

15 WWhyGelato.com | Ingredients. 2015. WhyGelato.com | Ingredients. http://www.whygelato.com/gelato101/ingredients.asp.

16 Cargill: Food Ingredients Europe, Middle East, and Africa . 2015. http://www.cargillfoods.com/emea/en/index.jsp.

initiate. This concern is based on the consumption of 250 grams of Gelato per day produced with polyalcohol.

Raw Food Gelato

Raw food Gelato is another example of a modern innovation in Gelato making. This concept surrounds natural, un-cooked, whole, organic ingredients. This Gelato product is made without milk, gluten, eggs or refined sugars. As an example, the product is achieved using organic products such as organic Sicilian almonds that have been soaked, blended then filtered to create almond milk. The resulting milk is not heated and pasteurised as traditional milk products, but due to the freshness of the product, it is processed into gelato within twenty-four hours combined with other ingredients.

Other ingredients that may be used in raw food Gelato include raw chocolate, cashews (that contain good fats, 35 per cent protein and are cholesterol free) and coconut sugar (that is low-GI and is used as a sweetener alongside coconut meat).

The demand for organic, raw-food Gelato product is increasing throughout Italy. This is supported by Italian producers' pride in their regional organic environment and their strong affinity with the quality foods they produce.[17]

17 Italian Gelato 2016, Information sourced from original Italian gelato information portal, http://www.italiangelato.info.

7. KNOWLEDGE TRANSFER: APPLYING THE OUTCOMES

The following observations encapsulate the information gained by the Fellow throughout the course of the Fellowship and identify the dissemination opportunities (current and future).

Key observations:

- Artisan Gelato skills are well established throughout Italy and are perceived as an exemplary profession.
- A large percentage of the Italian population consumes Gelato. Additionally, the consumption of Artisan Gelato is notably increasing with a marked decline in the consumption of manufactured Gelato.
- Australia needs to receive greater recognition for the culinary skills mastered by professionals in areas such as Artisan Gelato making to elevate this culinary skill to the level with which it is recognised in countries such as Italy where such craftsmanship is valued and respected.
- The Italian culture of Artisan Gelato is increasingly contributing to the Australian way of life. Australia is a very new and modern country with a blend of many cultures. We embrace many principles of Artisan specialist skills but we need to develop a professional educational base to establish these skills and develop associated credentials. Consulting with local hospitality industry leaders who have expressed great interest in the development and recognition of these skills.
- The broader Australian community is capable of elevating the standard of Culinary Vocational Training, thus providing a renewed level of respect for chef credentials and high-level skills throughout Australia.
- Observing other culinary teachers who are extremely knowledgeable in their specific area of expertise and who are supported by a vibrant passionate community.
- The Artisan Gelato industry is very well established internationally. The profession dates back as early as the C11AD. It is estimated that Italy currently has 36,970 specialist gelato retail outlets, an increase by 10 per cent in the last five years.
- The growth of Artisan Gelato businesses is rapidly increasing throughout Australia. Assistance is sought from the Australian Federal Government and State Governments to encourage the Australian hospitality industry to continually develop and support our food culture and provide educational and training opportunities to enable professionals to acquire specialist culinary skills.

Dissemination opportunities:

- The Carpigiani Gelato University in Italy expressed a keen interest in extending Artisan Gelato education to Australian through providing vocational training to culinary students and the broader community. William Angliss Institute is currently in the process of establishing a professional training base for Artisan Gelato.
- The Carpigiani Gelato University in Bologna is an internationally-recognised specialist training institution and it would be highly beneficial to further explore the benefits of establishing in Melbourne, Australia a similar institution to service the training needs for the southern hemisphere.
- Professional Gelato making workshops have already been held in conjunction with William Angliss Institute and the Australian Culinary Federation for the Young Chefs' Association.
- Research acquired through the ISS Institute / HESG Fellowship was presented at William Angliss Institute to leading academics who are currently establishing a Bachelor of Culinary Arts Degree.
- Skills and knowledge gained from the Fellowship experience significantly enhance the Fellow's ability as a consultant and instructor in professional Gelato Making courses offered through William Angliss Institute in conjunction with Majors Group, Carpigiani Gelato University.

7. KNOWLEDGE TRANSFER: APPLYING THE OUTCOMES

- Introducing a specialist unit of study with a focus on applying and improving Gelato knowledge in the Unit of Competency SITHPAT306, Produce Desserts. This unit is currently undertaken by Commercial Cookery and Patisserie students in their vocational culinary qualifications.
- Developing international professional and educational networks with other Culinary Educators worldwide.

8. RECOMMENDATIONS

The Fellow is truly thankful for the experience of being in Italy and attending the Carpigiani Gelato University. This experience has provided her with respect of artisan gelato makers but also an insight of the training shortcomings currently in Australia. Her report identifies that Artisan Gelato construction is a distinguished trade and a skill set that is held in high regard in Italy. The intricacy that surrounds producing this food product and the required depth of knowledge is unattainable through training in current Australian hospitality industry qualifications, as we only touch on the foundations of the necessary skill development in our current training packages.

Key recommendations

- The Fellow suggests that the Australian Federal Government should consider how we could further develop our current hospitality industry professionals to the required skill level in an emerging market such as artisan gelato. Furthermore, the support of the Federal Government would be required to create easily accessible funding that assists reputable vocational training providers to establish these artisanal certifications and manage the quality of the training.
- The Fellow would like to see the Skills Service Organisations (SSO), formerly the Industry Skills Councils (ISCs), establish certification for special artisan skills for the hospitality industry enabling our unique food culture to be a leading force in vocational education and training throughout the Asia Pacific region.
- Currently training packages focus on the foundation development of chefs' training and hospitality industry skills here in Australia through certificate SIT30813 and SIT40713. Artisan certification provides a pathway to develop the building blocks of a continuous improvement plan ensuring foundational training packages have a pathway for professionals to meet the existing and emerging skill development needs of industry.
- Currently, in Australia our culinary training providers are producing pastry chefs SIT40713 and commercial cooks SIT30813, but we are not producing highly professional and knowledgeable industry/ educational consultants with the vast knowledge and expertise required to assist, advise and support businesses in establishing high-end quality artisan products.
- Government bodies are advised to constantly review skill shortages in Commercial Cookery SIT30813 and Patisserie programs SIT40713. An initiative should consider developing specialised courses from within Australia to a diploma level by learned individuals who have been privy to new and improved methods in other countries.
- Create an Australian Artisan Academy whereby one can direct future food artisans to enable them to find the right training and endorsed qualification packages to lead them to a recognised profession in their field of expertise.
- Australia would greatly benefit from the establishment of this type of specialist training facility using local professionals and create a culture of shared sustainable expertise. Such an establishment would be a recognised base of learning where experts in relevant fields could be brought together both within Australia and from overseas, to further add to our local skills base.

Further Research opportunities

- How the Australian hospitality industry would benefit from the construction of certified artisanal skills training institute allowing for industry focused research and development. This facility would be at the forefront to developing and certifying our industry professional's artisan practical skills currently not offered in Australia.
- By what method can trade qualified industry professionals upgrade their skills to a higher skill level. Current industry professional need to leave Australia to find training in artisan skills within their field.

8. RECOMMENDATIONS

- European study of artisan gelato in Italy's neighboring countries. Developing research capability and a solid knowledge base in vocational trainers will provide a foundation for the next generation of chefs.
- Modern sugars used in the culinary industry. This recommendation suggests the inclusion of a food science unit inserted into the SIT40713 Certificate IV Patisserie program to provide students a greater depth of knowledge understanding specific foundational functions of ingredients.

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10. APPENDICES

10.1 Optimal Gelato construction ingredients

The two charts below indicate the guidelines that determine the ranges for optimal gelato construction. The percentages shown provide a range of ingredient levels within which a Gelato maker can adjust their recipes. If the ingredient components of a recipe fall within the percentages of all six parameters, the outcome will invariably be a balanced saleable product.

SUGAR	FATS	MILK SOLIDS NO FAT	OTHER SOLIDS	WATER	TOTAL SOLIDS
14 - 24%	3 – 10%	7 - 12%	0.3 – 0.5%*	32 - 42%	58 - 68%

Carpigiani 2015 . Information sourced from Carpigiani Gelato University course May 2015.

The chart below indicates some of the ingredients to be found in Gelato construction and demonstrates the six key parameters Gelato makers must take into consideration.

INGREDIENTS	SUGAR	FATS	MILK SOLIDS NO FAT	OTHER SOLIDS	WATER	TOTAL SOLIDS
Milk (Whole)		3.5%	9%		8 7.5%	12.5%
Dark Chocolate (70%)	30%	40%		30%		100%
Egg Yolk		30%		18%	52%	48%
Pineapple	12%			9%	79%	21%
Strawberry	8%			7%	85%	15%
Cacao Powder (22-24%)		23%		72%	5%	95%

Carpigiani 2015 . Information sourced from Carpigiani Gelato University course May 2015.

As an example, milk contains an average of 87.5% water and fresh pineapple contains 12% of sugar. This is where understanding the composition of ingredients becomes very important because in the selection of a certain amount of one ingredient, its composition and quantity must be taken into consideration when compared with other ingredients, to ensure that it falls within the parameters indicated to achieve a balanced recipe.

10. APPENDICES

10.2 Main Sugars Utilised in Gelato Making

1. Sucrose
2. Dextrose
3. Glucose syrup
4. Dry glucose syrup
5. Fructose
6. Maltodextri

10.3 Comparative sweetness of various sugars (Compared with Sucrose at 100%)

The sample chart indicates comparative sweetness of various sugars when compared with Sucrose at 100% benchmark of sweetness and anti-freezing power. This chart demonstrates the importance of the type of sugar selected in the construction of Artisan Gelato.

SUGAR	SWEETNESS	ANTI-FREEZING POWER
Sucrose	100%	100%
Dextrose	0.7%	1.9%
Dry Glucose Syrup 44 DE	0.6%	0.8%
Maltodextrin	0.15%	0.3%
Fructose	1.7%	1.9%
Trehalose	0.45%	100%
Honey	1.25%	1.9%

Carpigiani 2015 . Information sourced from Carpigiani Gelato University course May 2015.

The above chart demonstrates the required adjustments when making a Gelato recipe less sweet but maintaining the same structure. By substituting the Sucrose with an equal quantity of Trehalose, it is possible to make the Gelato approximately 50% less sweet. Trehalose is 50% less sweet than Sucrose but it possesses the same anti- freezing power as sugar, thus retaining the gelato structure.

It would also be possible substitute Dextrose for Sucrose, replacing the Trehalose, however, its quantity in the recipe would need to be adjusted by approximately half due to its anti-freezing power being twice the strength of Sucrose and Trehalose. If the Gelato maker decided to use Dextrose, then the sweetness of the product would be only .35% of the sweetness that would be achieved if using Sucrose, and lower than if using Trehalose. In using half of the quantity of Dextrose in the recipe, the sweetness is less again.