

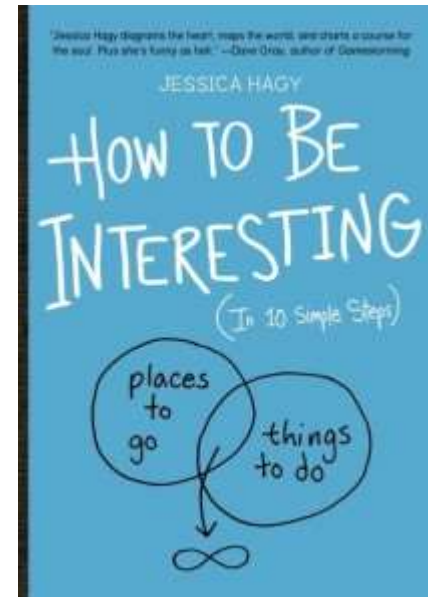


**EMPLOYABILITY ATTRIBUTES REQUIRED OF
SOUTH AFRICAN FOOD SCIENCE AND
TECHNOLOGY GRADUATES.**



OVERVIEW

1. Introduction
2. Graduateness & employability
3. Food science & technology
4. Research problem & research questions
5. The online survey



1. INTRODUCTION



1. INTRODUCTION

- Fundamental obligation of society to prepare young adults to be **productive** members of society (Lowden, Hall, Elliot & Lewin, 2011).
- HE is one option to achieve this and must meet the **expectations** of young adults (students), parents and societal stakeholders (government, industry, professional bodies, etc.).

1. INTRODUCTION cont.

- General sense that graduates need to be **better prepared for their role in society after graduating** (Griesel & Parker, 2009; Litchfield et al., 2010).
 - Secure employment (or become self-employed - shift due to economic pressures).
 - Meet expectations of employers / entrepreneurial.
 - Benefit themselves, employers and society.

1. INTRODUCTION cont.

- “...capable of actually doing things rather than reciting propositional knowledge...” (Halliday, 2004:579).
- Able to adapt to the rapidly changing world (Attali, 2014; Barnett, 2004).

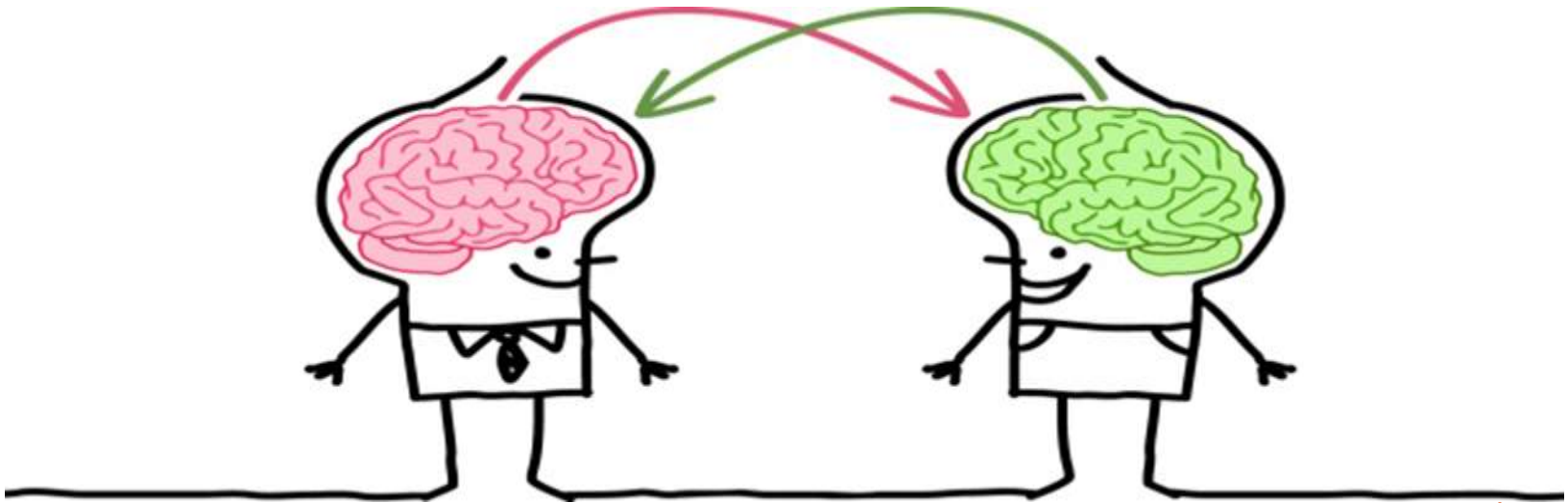
1. INTRODUCTION cont.

- Increasing pressure on HE to deliver graduates who are:
 - **Empowered, professional, productive, flexible, employment-ready** (Andrews & Higson, 2008; Errington, 2010, Halliday, 2004; Harwood, 2010; Litchfield et al., 2010 & others)
 - Meet the needs of a **rapidly evolving modern workplace** (Attali, 2014; Barnett, 2009).

1. INTRODUCTION cont.

- In SA graduates have “...**inadequate skill levels & poor work readiness...**” (DHET, National Skills Dev. Strategy, 2011a:3).
- Personal perspective...

2. GRADUATENESS & EMPLOYABILITY



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GRADUATENESS & EMPLOYABILITY

- Difficult concepts to define & much debated (Andrews & Higson, 2008; Lowden et al., 2011).
- To some → closely related
- To others → outcomes of the binary system of HE with:
 - **Graduateness** being a product of **traditional education**.
 - **Employability** a product of **vocational & professional education**.

(Gowdy, 1994; Harvey, 2004; Teichler, 2003)

GRADUATENESS &/OR EMPLOYABILITY

GRADUATENESS

- **Individual growth & transformation** (Harwood, 2010; Hazelkorn, 2013).
- **Broad academic** cultivation with focus on adaptability (Steur, Jansen & Hofman, 2012).
- **Scholarship** through research, reading & inquiry (Barnett, 2004).
- Skills to learn better & ability to **construct knowledge** (Ashworth et al., 2004).

EMPLOYABILITY

- Emphasis on **immediate competence** in the workplace, empowered, professional, productive, employment ready **&/or** time to gain employment & resource for economic growth (Andrews & Higson, 2008; Halliday, 2004).
- Focus on **practice** (Harwood, 2010).
- **Essential academic** knowledge & skills to be productive (Halliday, 2004).

WORKING DEFINITIONS FOR THIS STUDY

EMPLOYABILITY

GRADUATENESS

- a. Transformation human qualities & ontological dispositions (Barnett, 2004).
- b. Intellectual development (Steuer et al., 2012)

EMPLOYABILITY

- c. Academic-, discipline- &/or vocational-specific knowledge, expertise & skills.
- d. Generic transferable skills.
- e. Human dispositions & qualities including personality traits & learned behavior.

GRADUATE &/OR DIPLOMATE

GRADUATE

- Product of academic and/or professional degree programmes.
- Undergraduate qualifications including “...certificate, diploma and degree studies to honours qualifications, excluding Masters and PhD qualifications” (Griesel & Parker, 2009).

DIPLOMATE

Product of vocational and/or professional diploma programmes.

WORKING DEFINITIONS FOR THIS STUDY

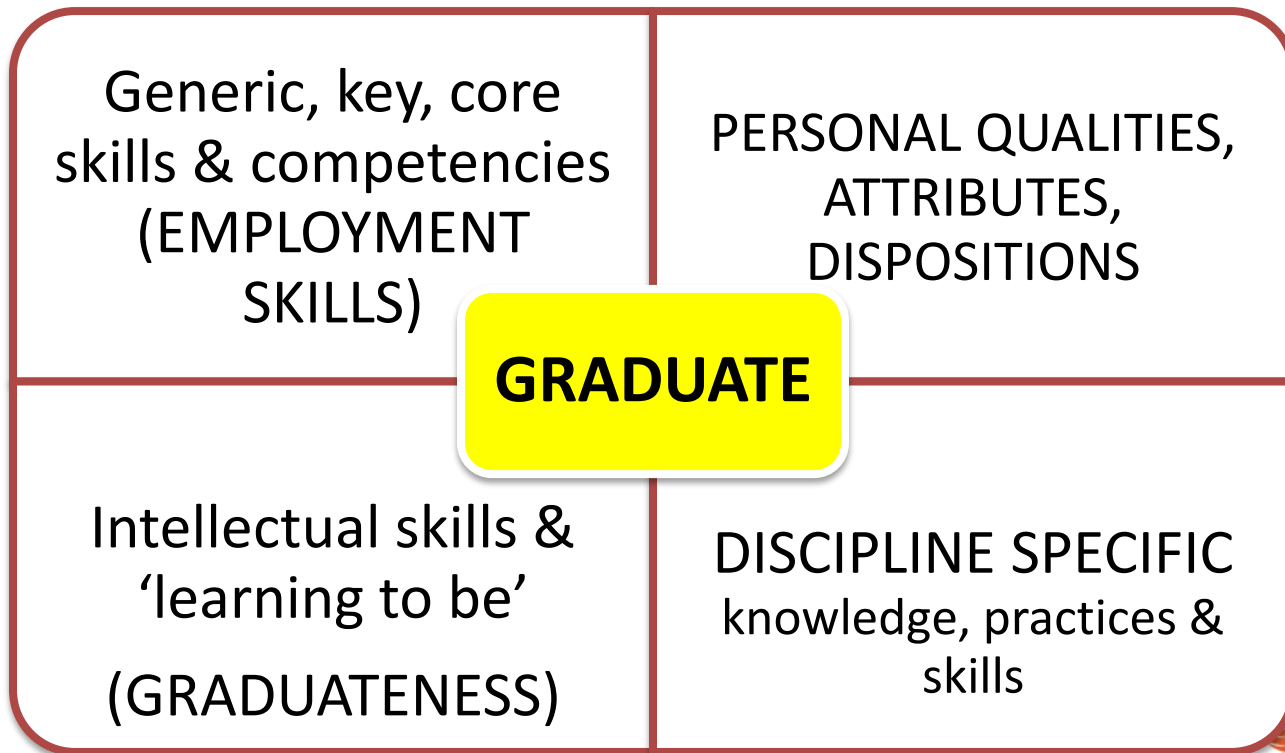
Graduate

Undergraduate diploma & degree programmes including: B. Tech., excluding Honours, Masters and Doctoral qualifications.

- In line with more current trends of seeing science & technology as moving closer to each other rather than being two distinct ways of “knowing” (Chen & Stroup, 1993:447).
- Nature of ‘graduateness’ is changing to keep pace with the knowledge society (Griesel & Parker, 2009).

Graduates must be holistic & well-rounded (employability encompassing graduateness) to be of optimal benefit to society & **must be capable to continuously develop** (Archer & Davidson, 2008; Attali, 2014; Barnett, 2004, Barnett, 2009; Hazelkorn, 2013; Quinlan, 2012).

- To achieve the desired outcomes, HE requires a **coherent framework** (Chen & Stroup, 1993).



3 FOOD SCIENCE & TECHNOLOGY



FOOD SCIENCE & TECHNOLOGY

- **Food science** – complex, multi-disciplinary (engineering, biological & physical science) studying the nature of foods (deterioration, processing, improvement, availability, variety, etc.)
- **Food technology** – application of food science
- In reality terms **used interchangeably** (IFT, 2011).



FST GRADUATE ATTRIBUTES - INTERNATIONAL

- **IFT** guidelines (2011) – based in Chicago in **USA**
 - Administrative & physical requirements
 - Curricular standards (foundation modules)
 - Core competencies
 - “Success skills” which are “generally recognised generic graduate attributes”
- **Track_Fast** project – “most desirable knowledge, skills & competencies” for FST in the **EU** (Flynn et al., 2012)
- **IUFoST** (Canada) – Core competencies?
- **Philippines** – legislated minimum competencies

SA CONTEXT OF THE STUDY:

Food Science

- ‘Traditional’ science degree
- BSc, BSc Hons. (or 4 yr. professional degrees), MSc, PhD.
- No re-alignment to new HEQSF required
- Departments:
 - **UP**
 - **SUN**
 - **Venda**
 - **UFS**
 - **UNISA**

Food Technology

- ‘Vocationally-oriented’ diploma with compulsory WIL.
- Existing: Diploma, B. Tech., M. Tech., D. Tech.
- Re-aligned to new HEQSF required (DHET, 2012a)
- Departments:
 - **TUT**
 - **CPUT**
 - **DUT**
 - **UJ**
 - **CUT**

4. BACKGROUND TO THE RESEARCH PROBLEM

- Currently there has been no formal research into the expected and required graduate attributes for FST within SA.
- Subsequently not possible to ascertain if the requirements of SA stakeholders are being adequately met.

MAIN RESEARCH QUESTION

Are food science and technology graduates of higher education being adequately prepared to meet the requirements of SA societal stakeholders?

RESEARCH SUB-QUESTIONS

1. What are the **required graduate attributes** of SA FST in order to meet the expectations of societal stakeholders?
2. To what extent do **FST students perceive** to have achieved the aforementioned graduate attributes on the completion of their studies?
3. To what extent do **recently qualified & employed FST** graduates meet the aforementioned graduate attributes **as perceived by graduates & their employers**?
4. How does **WIL contribute** to achieving the aforementioned graduate attributes?

RESEARCH DESIGN & METHODS cont.

Research sub-question 1:

What are the expected & required FST graduate attributes in order to meet the expectations of SA societal stakeholders HE?

- Literature review (ATLAS.ti)
- Develop **survey questions**
- Workshop survey questions – key stakeholder **focus group**
- **Pilot**
- **Electronic survey (CURRENT)**
- Analyse and integrate data - dictate questionnaire/s of phase 2

THE ONLINE SURVEY

The screenshot shows a web browser window with the following content:

The employability attributes required of Food Science and Technology graduates from South African higher education institutions

INTRODUCTION TO THE SURVEY

This 30 - 35 minutes survey questionnaire will collect data to identify the most important employability attributes required of food scientists and food technologists on **entering employment for the first time after graduating** from a South African (SA) Higher Education Institution (HEI). The results obtained will be used to measure the employability attributes of the current graduates and identify potential gaps. The ultimate aim is to make use of the data and information collected to improve the employability and work readiness of food science and food technology graduates from SA HEIs and increase the general level of service delivery to the graduates and the SA stakeholder community.

The survey has **five sections**, namely:

- General information of the respondent
- Employability (general employment) skills e.g. communication, team work, etc.
- Personal attributes required of food scientists and/or technologists
- **Broad** food science and/or food technology disciplinary understanding and skills (cognitive and technical skills)
- **Sector-specific** food science and/or food technology disciplinary understanding and skills

The responses to the survey will be anonymous and treated as confidential. Once you have completed the survey, you will be asked if you are willing to take part in the next phase of the research study which is to determine to what extent the current food science and food technology graduates are demonstrating the employability attributes identified in the survey.

You are under no obligation to complete this questionnaire and may stop doing so at any stage in which case your responses will be excluded. However, you are encouraged to complete the whole questionnaire and submit it so that your voice is heard.

PLEASE NOTE

According to the revised National Qualifications Sub-Framework, the SA Department of Higher Education and Training has made no provision for the B. Tech. qualification. The B. Tech. in Food Technology will be phased out and replaced with the Advanced Diploma (undergraduate) and Postgraduate Diploma in Food Technology as a 4-year Bachelor's degree. **For the purpose of this survey, the B. Tech. Food Technology will be considered as an undergraduate qualification.** The data collected will assist with the development of the curricula and content for the new qualifications.

At the bottom of the survey content, there are three buttons: "LOAD UNFINISHED SURVEY", "NEXT ->", and "EXIT AND CLEAR SURVEY". Below these buttons, it says "Powered by: Q3 Business Software".



THE ONLINE SURVEY

SIX SECTIONS:

1. Who are **YOU**?
2. **EMPLOYABILITY** skills
3. Personal qualities, attributes, dispositions & intellectual skills (**GRADUATENESS**)
4. Food science &/or technology **SPECIFIC DISCIPLINARY UNDERSTANDING AND SKILLS**
5. **SECTOR-SPECIFIC** food science &/or technology requirements
6. **GENERAL**

PRELIMINARY SURVEY DATA ANALYSIS INDICATES:

Live reporting 03 Sept @ 14:12

- Incomplete responses = 133 (44%)
- Complete responses = 169 (56%)
- Total = 302
- **Reasons:**
- Long, complex, exit without submitting, decide its not for them...



EMPLOYABILITY SKILLS

1. **General employability** (reading, numeracy & mathematics, computer literacy...)

✓ Effective reading **5.48/6**...

✓ Numeracy **5.27/6**

2. **Communication skills**

✓ Recording & reporting **5.59/6**

✓ Listening skills **5.42/6**

✓ Sensitivity to cultural, political, disability & gender issues...

4.90/6



EMPLOYABILITY SKILLS

3. Leadership & management skills

- ✓ Effective time management **5.60/6*******
- ✓ Entrepreneurial skills **4.90/6**

4. Diversity management skills

- ✓ Generally lower scores
- ✓ Considerate of concerns & positions of different ethnic, social & gender groups
4.98/6
- ✓ Being politically sensitive **4.38/6**

PERSONAL QUALITIES, ATTRIBUTES, DISPOSITIONS & INTELLECTUAL SKILLS (GRADUATENESS)

- Paying attention to doing things properly 5.56/6
- Accountable & responsible 5.49/6
- Intellectual curiosity 5.43/6
- Likeability 4.49/6



DISCIPLINARY UNDERSTANDING & SKILLS

1. Ranking of fundamental academic & professional understanding, skills & competencies for food scientists &/or technologists.

Food Scientist	Other	Food Technologist	Other
Food safety & quality management	Food chemistry	Food safety & quality management	Food safety & quality management
Food chemistry	Food safety & quality management	Food processing	Food microbiology, general microbiology
Food processing	Food regulation & control	Food regulation & control	Applied food science & technology

GENERAL

- **In your understanding, differentiate between a food scientist and food technologist and what each should be able to do when entering work for the first time after graduating.**
- “Food scientist - apply science behind the application / Food technologist - apply the skill within the factory”
- “Food scientists - theoretical research / Technologists - more hands on involvement in food industry”

GENERAL

- “Food technologist is an individual who has been taught theory followed by the various practical training sessions at the study institution. The 1 year practical in-service training is invaluable and instrument to the qualified food technologist entering the working world. I am not too familiar with the curriculum of a food scientist and therefore cannot make the associated comments”
- “Food scientist should have a broader and in depth knowledge while being able to solve more complex problems. Technologist should have more practical experience and be able to apply learning to practical situation.”



A SPECIAL THANKS TO MY SUPERVISORS:

PROF. G. J. JACOBS (UJ),
PROF. C. M. FOURIE (UJ)
PROF. AMANDA MINNAR (UP)

THANK YOU!



DISCUSSION, COMMENTS & QUESTIONS



Reminder....

<https://g3research.co.za/index.php/171496>



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