Clarifying Food Technology teachers' professional identity

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Abstract

If a teacher of food technology (FT) within technology education (TE) uses a holistic approach to teaching secondary students, the advancement of their professional identity as a FT teacher is reliant upon the implementation of essential problem solving concepts. During the period of 2012-2017 FT underwent major curriculum changes as it was challenged as a secondary course by hospitality and this succession of curriculum change generated high levels of tension and confusion), resulting in a change in identity for secondary technology teachers and a resistance to further curriculum changes.

This study, focused on the professional identity changes required to support the modifications to the TE curriculum, particularly food technology and identifies a way to promote professional identity transition. It demonstrates how the developing professional teacher identity is impacted and identifies the factors causing the greatest change. The focal lens is on the coursework and how authentic activity, including the Technology Day, held at a local secondary school, leads to a solid understanding of Technology Education. It uses personal folios, online reflective journaling and interviews as a way to trace the professional identity change and the results are presented using the Logic Framework Model.

This research makes an important contribution to the field of Food Technology by identifying the factors that promote professional identity change in preservice TE students. The research findings inform higher education ITE programmes, whose aim is to promote a transition of a preservice student's professional identity.

KEYWORDS: FOOD TECHNOLOGY EDUCATION, PROFESSIONAL IDENTITY CHANGE, HIGHER EDUCATION, PRE-SERVICE TEACHER

Introduction

This study researches and identifies the factors that shape the professional identity of preservice Food Technology (FT) education students who transition to university in order to become secondary FT teachers.

Curriculum change is a constant in The Technologies and with a succession of curriculum change teacher's experience high stress levels and turmoil resulting in a resistance to further curriculum change (Howard & Mozejko, 2016) and a change in teachers identity (Harfield, 2017; Williams, 2018). This study focuses on the professional identity changes required to support the modifications to the NSW FT curriculum that now includes hospitality—a Vocational Education Training (VET) course, as an essential component. It makes an important contribution to the field of teaching Food Technology in secondary schooling by identifying the factors that promote professional identity change in preservice FT students. The findings will inform higher education TE programmes, whose aim is to promote a transition of a preservice student's professional identity.

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Overview

The FT curriculum in Australia has undergone much change. The offering of Hospitality, a popular VET course, has challenged the offering of Food Technology in its content and nature, the pedagogies used, and its offering in schools. These changes and an inability of teachers and students to differentiate between Hospitality and Food Technology have resulted in internal conflict and a lack of understanding about the FT curriculum. This has resulted in the fragmentation of groups of FT teachers.

Many preservice, FT students, enter the Initial Teacher Education (ITE) university programme believing that they will teach their professional skills using a didactic, lockstep, master-and-apprentice approach. The impact of the current and future curriculum, based on a contemporary, design-thinking approach leaves them in conflict, wondering exactly what and how they will teach the critical thinking required and instead teach the food preparation techniques found in the hospitality syllabus. The reconciliation of these internal tensions and conflicts is required to enable the effective transition of a preservice student to a FT teacher.

This confusion between hospitality and FT has resulted in a fragmented schema of FT in schools whereby preservice TE students and new graduates find it difficult to clearly define what FT entails, to locate their situational professional identity (Hamilton, & Pinnegar, 2017), and implement the expected curriculum changes (O'Connor, & Scanlon, 2015).

Technology Curriculum Change, Tensions and Resistance

Change and reform occur frequently in the TE curriculum. Technological advancements and changes in teaching pedagogies have affected the TE curriculum, workplace activities and employment opportunities for current and future generations. These impacts have resulted in growing support for both curriculum change and school reform (Lynch, Madden, & Doe, 2017). Throughout Australia, changes occur as governments impose technological, political, cultural, welfare and educational changes upon teachers (Bell, 2016). Design thinking and project-based learning are promoted in the Australian Curriculum: The Technologies, and are supplemented with contemporary changes, including the introduction of: blended classrooms wherein integrating technology-based activities are used as a method of teaching (Banas, & York, 2016); flipped classrooms (Howitt, & Pegrum, 2016); and integrated subject learning as STEM or STEAM (Boy, 2017; Doe, 2016; McAuliffe, 2016b). These continue to add change imperatives to the curriculum.

The disconnect in teaching technology as perceived by the profession of technology has posed a significant problem in linking the subject to possible careers, the popularity of this course is in decline. These changes in the TE syllabus has ensured debate between conservative curriculum values and the contemporary demands of a syllabus (Turner, 2012). If secondary students were to study both subjects, Food Technology with food science being taught from a strong perspective, and Hospitality, a syllabus is which is gleaned from Nationally accredited TAFE content, they would graduate with an excellent understanding of all food areas. The great chefs of the world do not use their amazing skills to emulate food production; they research, test, experiment and use their highly developed skills to create products that distinguish them from the norm. Some Australian teachers who suffer from a fragmented professional identity choose to focus on cooking skills in both courses, ensuring that their students do not see a difference and only elect to study one of these subjects, leaving them to flounder in food mediocrity as opposed to excelling in the creations of their chosen area of understanding.

Professional Identity Transition

In the study, the participants enrolled in a TE Foundation course embedded within a Bachelor of Education—TE programme. This research, based on the ontology of experience (Clandinin, 2012) used reflective narratives to capture the preservice TE students' life stories. It is these stories that provide insight into the preservice TE students' professional identity (Woolfolk, 2007; Zare-ee, & Ghasedi, 2017). Identity is shaped by a lifetime of activity and interactions including past and present personal and professional life experiences (Day, Kington,

Stobart, & Sammons, 2016; Furlong, 2016), prior university courses (Smith, 2017) and school and community based encounters and collaborations (Rodríguez-Sabiote, & Gallego-Arrufa, 2015; Woo, 2015).

The term 'social constructivism' (Lev Vygotsky, 1978), argues that cognitive functions originate in, and are products of, social interactions. Learning is not just the assimilation of new knowledge; it is the process used to integrate learning into a knowledge community (Creswell, 2009; Lincoln, & Guba, 2000). Constructing meaning is an active and continuous process, and as a result the students understanding changed as they progressed through the coursework, completed activities and experiences that challenged and expanded their thinking.

The preservice students' transitioning of professional identity evolves through social constructivism, such as, social group membership (Hooley, 2017). Here the preservice TE students share a common goal of becoming a teacher and share characteristics such as dignity, pride, respect, shared values and beliefs. As they work together to achieve their goal, their professional identity was impacted upon through social constructivism. It is these 'stories' that provide insight into the preservice TE students' professional identity.

Framing Identity Through the Foundation Course

The study examined how preservice FT students' professional identity adapts during the TE Foundation course in the first semester at university and explored how aspects of the course context shaped the professional identity of the preservice FT students and the TE Foundation coursework is underpinned by research. The goal was to create a course that would clarify issues, reduce tensions and assist in the transitioning of the professional identity of preservice TE students. The intervention coursework includes sharing life histories and builds trust and rapport to unify the students so that these connections encourage identity evolution.

An overview of the TE Foundation course is provided in Table 1.

Table 1:   Technology Education Foundation Course Content #Note: * Refers to authentic experiences

Week	Weekly Activity
1	**What is Technology Education?** • Rapport and team building—link existing skills and current and future identities. • Recognition of identities/ shift in professional identity (Kennedy, & King, 2018). • Development of entry concept map (Von Glasersfeld, 1991).
2	**All About Design!** • Building a unified cohort that helps participants to come together. • Develop professional identity
3**	**Design and Technology—A Contradiction of Terms.** • Secondary school visits, observing traditional and holistic approaches. • Discourse on school community, classroom teacher, lesson and students. • Authentic experiences-professional identity (Flores & Day, 2016). • Authentic images of self in the position of teacher (Beauchamp, & Thomas, 2019).
4	**Critical Thinking for All** • TE learning imperatives, especially problem solving and critical thinking. • Creation of classroom resources that support the learning imperatives. • Journal reflections about school visits, critical thinking and TE. • Professional identity—synthesis, integration and action (Sachs, 2011).
5*	**Design Thinking** • Interactive visit to a special needs school. • Design Brief: Promoting literacy in students with low reading motivation.
6*	**Problem-based Learning and Authentic Activity** • Implement solutions. Authentic activity promotes critical thinking, (Loepp, 2014). • Connecting academic learning with school experiences promotes deep understandings, which influence the developing professional identity (Zuga, 2014).

Week	Weekly Activity
7 & 8	**Food and Technology Education Curriculum** • NSW Technology Mandatory Syllabus; activities and lesson planning for The Technology Day. Students write a design brief and prepare lessons and resources. • The lessons are cost effective and used for The Technology Day.
9	**Creativity** • Peers teach a 20-minute lesson segment of a lesson with subsequent feedback suggesting how to support teaching (Jones, 2012).
10*	**The Technology Day** • Teach and observe peers teaching TE using contemporary practice • Lessons taught in pairs; one teaches, the other writes an observation. • Unified schema of TE resulting in improved classroom practice (Williams, 2018). • Reflective journaling promotes understanding of social identity complexity and, when combined with interactive contexts, they evolve professional identity (Monrouxe, 2009).
11	**Sustainable Design** • Adapting lessons to ensure a sustainability lesson focus.
12	**Issues in the Classroom** • Discussion: issues about TE to eases identity tensions. • Shared reflections provide pedagogical space from the authentic learning activities. This space is necessary to synergise evolving identities (Atkinson, 2019), to encourage reflection and avoid projective identification with stereotypes (Mitchell et al., 2019).
Exam Week	**Case Study Participant Interviews**

Table 1 describes, and contextualises, the course content, strategies and experiences that are included in the TE Foundation course. The listed course inclusions provide information that, along with the time series analysis make it possible to identify which factors impacted on the preservice TE students' professional identity. Through the reflections documented in the electronic journals, this study scrutinises the factors impacting professional identity and how it empowers preservice TE students to move toward the teacher that they want to become.

Methodology

The multiple case studies use qualitative research to explore changing behaviours, perspectives, feelings and experiences of preservice FT students, in order to identify the factors that have affected their professional identity. Case study research assumes that examining the context and other complex conditions related to a case are integral to understanding a case (Yin, & Davis, 2007) To achieve this aim, the research questions guiding the Food Technology component of this study were:

1.   What were the preservice Food Technology students' professional identities at the commencement of the course?

2.   How do preservice Food Technology students' professional identities change during the semester-long foundation course?

3.   What were the preservice Food Technology students' professional identities at the conclusion of the course?

4.   Which aspects of the Technology Education Foundation course impact on the professional identities of preservice Food Technology students?

The four research questions guiding this study inform each section of the Logic Framework Model. Research Question 1 informs us of the participants' initial professional identity attributes. The intervention section of the Logic Framework Model is informed by the responses to Research Question 4, asking how the foundation course affected on the transition of the professional identity of preservice Technology Education students. The changes in the Logic Framework Model (Figure 2) are informed by research question two and the outcomes in the Logic Framework Model are informed by

research question 3, which examines preservice Technology Education students' professional identities at the conclusion of the course.

The relevant case study data comes from multiple sources of evidence including entry folios, concept maps, reflective journals and semi-structured interviews that are used to triangulate results. The Logic Framework Model pulls the findings together and present them. This model was applied to all FT cases. The Logic Framework Model was used as a technique for scrutinizing and undertaking an evaluation of the change in a cause and effect process where the participant's identity was analysed. Interventions affected their identity that resulted in initial outcomes followed by ultimate outcomes
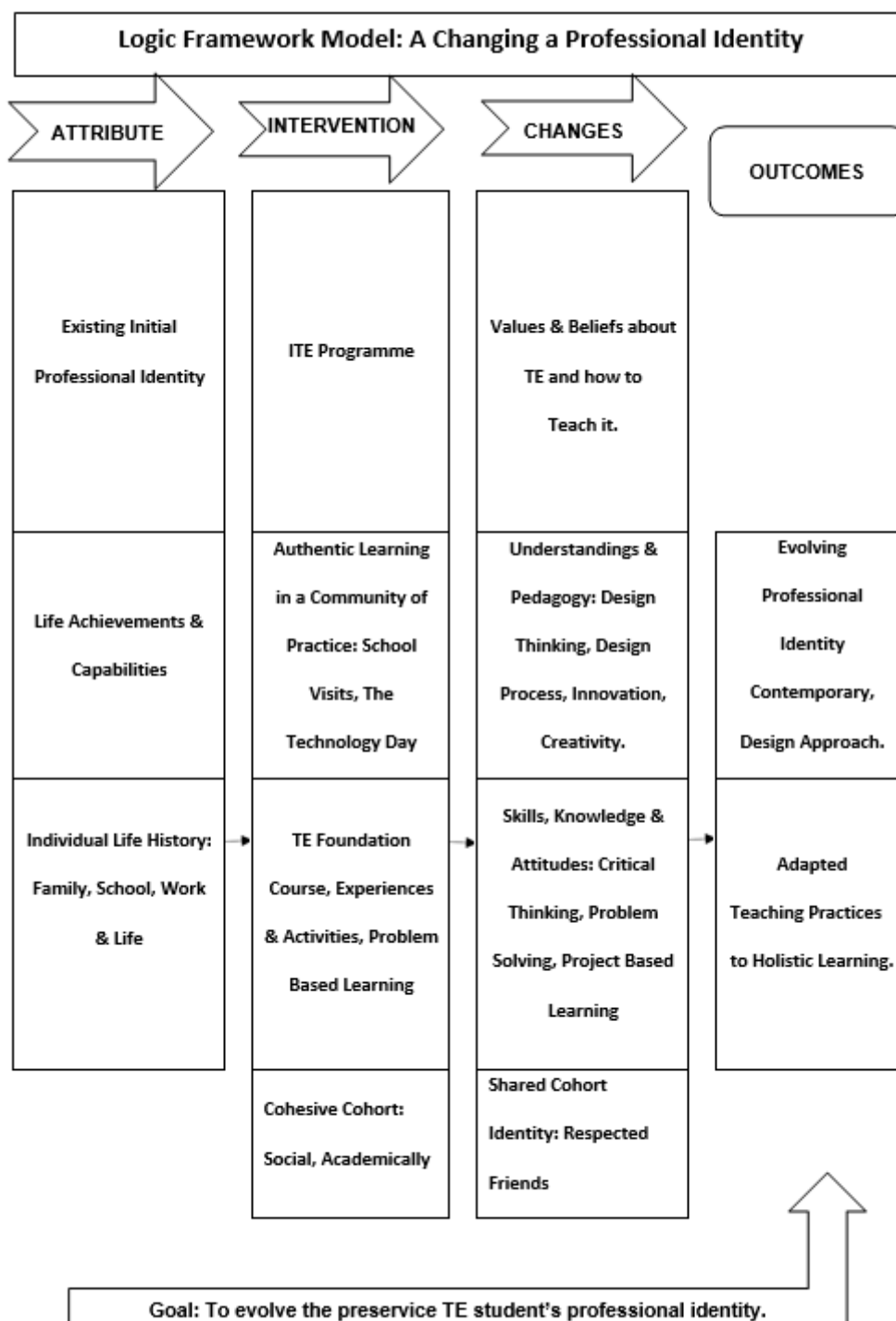

Figure 1   **Logic Framework Model**

Attributes	Intervention
The attributes refer to the characteristics of the initial professional identity belonging to the participant informed by research question one.	The intervention is the set of activities that the participant experiences that cause a change in their identity informed by research question four.
Changes	**Outcomes**
The changes occur because of the interventions. They are characterised by changes in identity, beliefs, attitudes, thinking and behaviours informed by research question two.	The ultimate outcomes are the long-term changes that occur after the changes from the intervention informed by research question three.

Figure 2:   Logic Framework: Changing Professional Identity (Trevallion, 2018)

The data collected provides extensive evidence to respond to the research questions. This study examined the professional identity transition of preservice TE teachers, including six pre-service Food Technology teachers during a TE foundation course. Through this examination of professional identity transition using a case study approach, this research sought to identify factors that promoted professional identity transition.

Results

The findings show that professional identity is re-formed by the interconnection and the layering of life-influencing factors, such as life histories, university study, activities and interactions within the cohort, working together within communities of practice. Developing preservice Food Technology Education (FTE) students' professional identity is a complex, challenging, relational and multifaceted process. Each of the study's participants successfully combined the influences from their past, their present Technology Education Foundation coursework, the initial Food Technology Education programme and authentic activities within school contexts to develop a powerful social psychology to inform their evolving professional identity.

The Logic Framework Model demonstrates the changing professional identity of each of the Food case study participants. The data for each of the participants was different. The attributes showed that their initial professional identity could be viewed through their individual life histories and their intellectual and social capabilities. Whilst each participant was in the same Food TE programme, the same cohort of students and the same TE Foundation course had similar experiences but different factors within these impacted on their initial identity. This provided a specific list of interventions for each participant. The interventions influenced each participant's initial attributes and causal changes. The Food Technology participants each exhibited individual changes in values and beliefs, understandings and pedagogy, skills, knowledge and attitudes, and in their shared cohort identity. These changes resulted in an outcome for each participant showing an evolving professional identity and adapted teaching practices. This contemporary identity aligns with the holistic approach promoted in the NSW Education Standards Authority's (NESA) 2019 Technology Mandatory and 2019 Stage 5 Food Technology and possibly the 2019 Stage 6 Food Technology Syllabus.

The cross-case comparison of the evidence from the six food case study participants revealed that the Logic Framework Model goal, to evolve the preservice TE student's professional identity, has been achieved in every case. The data in the Logic Framework Model showed that each preservice FTE student entered the FTE programme from a different background with different life experiences, as well as different values, beliefs and goals in life. Whilst different aspects of the intervention affected different students, there were common factors including: the rapport built by the tutor; the close cohesive cohort; and the authentic experiences held in schools, including school observation visits, problem solving with students in schools and The Technology Day. These shared interventions resulted in changes in the participants' thinking, attitudes and values and their teaching and pedagogy, that in turn resulted in a changed identity.

Conclusion

In the world where change is the constant, TE curriculum reform is the norm. Many preservice FT education students and new graduates find it difficult: to clearly define what FT education as opposed to Hospitality education entails, to locate their situational professional identity (Hamilton, &

Pinnegar, 2017) and to implement the expected curriculum changes (O'Connor, & Scanlon, 2015). To overcome this issue, preservice FT education teachers need to embrace change and reconcile internal conflicts in order to evolve their professional identity. The findings from this study provide a pathway for tertiary technology educators to begin this important process.

The study showed that in order to promote a change in professional identity and a willingness to accept and promote curriculum change must be accompanied, in university coursework by:

1.   Support of student values and beliefs

2.   Building mutual respect

3.   Valuing life history and experiences

4.   Development of a unified identity within the group

5.   Mentoring in group situations

6.   Participation in authentic experiences in a community of practice

7.   No fear of retribution for opposing views

8.   Ongoing, shared opportunities to reflect and evaluate

This study shows the pathway that preservice FT education students follow when facing change that confronts existing values and beliefs. The ontology and support of initial values and beliefs are essential. Those who are facing conflicting values and ideals and undergoing identity challenges because of an altered FT curriculum may resist using the ideas promoted in the new curriculum.

This research supports FT teachers who will need to adapt to the various changes that they will experience throughout their teaching careers. There will be changes to the FT curriculum and syllabus, changes to pedagogies and student centred teaching strategies, changes to the way they will use technological resources in their teaching and learning programs and in the classroom. They will be using e-technologies, m-technologies, virtual reality and apple and android applications in order to provide exciting lessons to stimulate their children. The content that they teach will include new emerging technologies, the problems that arise as the world populations grows, as sustainable food becomes desirable and the production of healthy, sustainable, fast food becomes a must. This can be seen in the rise of vegan foods in restaurants and supermarkets.

The pre-service FT education students must understand that they are responsible for teaching far more than cooking, they will need to use their skills to adapt their thinking, their professional identities as FT teachers to help their own student cope with change. They will need to change their professional identity to accept the change that occurs around them. By learning to take on board change rather than resist or fear it, these preservice teachers will be better prepared to evolve their professional identity.

At the beginning of a foundation course, building a rapport is essential to success. The tutor must understand where the students are coming from, by listening closely to their personal contributions. The tutor responds with positive reinforcement and an explanation of their role in the classroom. This builds an environment that is conducive to a social constructivism situation. When sharing common characteristics, beliefs and values and working together the preservice TE students will come together to build a unified group identity and share developing opinions as they evolve throughout the semester.

In the planned coursework, mentoring evolves professional identity as it allows shared, thoughts and challenges to evolve. Authentic activity is needed in coursework because authentic activity allows the students to relate learning to their community of practice. This ensures students observe and evaluate new concepts, comparing them with traditional approaches. Their reflections challenge their thinking as they connect the observations to their existing understandings. The concepts are presented without fear of retribution and with no marks allocated in order to ensure freedom of speech and opinion development. They are encouraged to risk using new processes and trial them before evaluating their teaching practices. To allow analysis and to promote identity change all preservice students reflect upon their authentic learning activities in their community of practice.

These reflections when shared with their respected mentors and group members who evaluate and synthesise change to professional identity.

When designing a foundation course that is introducing a new concept, or evolving the preservice teacher identity, the sharing of student values and understandings is essential. Observations and reflections on a variety of traditional and contemporary approaches used in classrooms in secondary schools that provide authentic learning opportunities where students trial and evaluate new concepts with change paradigm being implemented, will evolve a preservice teachers professional identity.

FT teachers' each have a different life history, a different background and life experiences. Some will have backgrounds in cooking, as a chef, in home science, in home economics, catering and fast food businesses but this approach to teaching the ITE Foundation course shows that everyone, no matter their background is capable of making changes to their professional identity. The Food curriculum cover a wide spectrum of food topics, it is far more than food technology including industries, product development, cultural impacts, environmental and economic decisions and changes in products through new research and emerging technologies. These are global issues effect FT teachers around the world.

With important changes to FT curriculums being assured, resistance is not going to move you forward. It is for this reason that I recommend this approach to the higher education ITE Foundation course. This way the preservice Technology education students will learn to evaluate change and evolve their professional identity and make appropriate and necessary adaptions.

Author biography

Deborah Trevallion is tenured at The University of Newcastle where she researches, teaches and coordinates under and postgraduate programs and courses in Technology Education. These programs encompass Computing, Food, Textiles, Industrial, Engineering, Design and Technology. Deborah is a globally published author and a Fellow of the Australian Council of Research. She has authored and published best selling textbooks, chapters in books and is regularly published in education journals. She is experienced and passionate about the areas of Creativity, Design, STEM, Problem based learning, Smart textiles and Technology Education.

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