

Work-integrated learning builds student identification of employability skills: Utilizing a food literacy education strategy

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Enterprising students who understand the work environment are considered more employable. It is accepted that higher-education has a responsibility to produce career-ready-graduates. Practicum experience provides a critical role in this preparation. This study describes the development and implementation of the WIL instrument and WIL experience to assess the perceived skill development of students (n=19). This research utilized three data capture points; 1) employability skills cluster matrix-self-assessment tool (ESCM-SAT), 2) industry feedback from supervisors to develop a deeper understanding of the value of WIL; 3) students used the Gibbs reflective cycle (Gibbs 1988). There were improvements in all skills clusters, main gains were in career management (p<0.01). Supervisor feedback gave direction for improvement for; communication, preparation and organization skills. Student reflection suggests career management skills were strengthened, confidence increased, as did their value of academics. The ESCM-SAT, industry feedback and student reflection were deemed a suitable combination to measure the WIL experiences from a student perspective.

Keywords: Undergraduate, public health nutrition, work integrated learning, food literacy

In 2015 a landmark strategy was implemented to produce 'job ready' graduates across Australian universities. *The National Strategy on Work-Integrated Learning (WIL) in University Education* was a collaborative effort between Universities Australia, Australian Chamber of Commerce and Industry, Australian Industry Group, the Business Council of Australia and the Australian Collaborative Education Network (Universities Australia, Australian Chamber of Commerce and Industry, Australian Industry Group, The Business Council of Australia, & The Australian Collaborative Education Network, 2015). This strategy aimed to increase opportunities for work-integrated learning (WIL) as it recognized mutual benefit for the students, employers, universities and economies.

WIL opportunities are typically embedded into curriculum design of postgraduate or professional allied health courses especially when clinical competencies are assessed through clinical placement (Brown, 2010). Furthermore, international recommendations (Stirling, Kerr, Banwell, MacPherson, & Heron, 2016), suggest that WIL activities are a key pedagogical strategy whereby curricular learning should be applied to the real-world work environment to deepen a student's learning. WIL, embedded within curricula design, is premised on the integration of theory into application, and utilizes real-world experiences to intersect academic learning with productive work (Orrell, 2011). WIL opportunities range from work simulations, industry projects, practicums (clinical and non-clinical),

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immersive international programs and internships which are conducted in groups or individually in a workplace environment (Orrell, 2011; Smith, 2012).

Enterprising students who understand the work environment and its context are considered more employable (Rae, 2007), however, employers have reported declines in basic communication skills (Moore & Morton 2017) and dissatisfaction with graduate employability skills (Sarkara, Overton, Thompson, & Rayner, 2016; Senior, Reddy, & Senior, 2014). Moore and Morton (2017) extended this discussion to highlight the need for universities to reflect on their ability to be able to identify skill domains in order to increase transferability of these skills past the WIL experience. Furthermore, skills and attributes in effective communication, team work, problem solving and critical thinking were lacking as was the application of new technologies as a requirement of today's graduates (Flores, Matkin, Burbach, Quinn, & Harding, 2012; Hesketh, 2000). The 2017 *Employability Satisfaction Survey* found that 85% of employers were satisfied with employability skills of graduates (Australian Government, 2017), however, the employability skills domain generated one of the greatest amount (33%) of comments as to how the higher education sector could improve the skills of graduates.

WIL experiences utilize theory as part of educational strategies that enhance the nature of learning in the workplace (Ferns & Lilly, 2015; Richardson, Kaider, Henschke, & Jackling, 2009) and can be applied across a range of disciplines including nutrition and public health. Research by Martin (1996) suggests that different sectors demand different qualities so the best WIL experiences are those that are most closely aligned with a given profession. In addition, self-directed and self-centered learning aligns with the theory that students are responsible for their own knowledge acquisition while inquiry for deeper understanding is facilitated by academics (Richardson et al., 2009; Silén & Uhlin, 2008; Stirling et al., 2016).

To date there have been numerous approaches to evaluating the WIL experience from a student (Freestone, Williams, Thompson, & Trembath, 2007; Jackson, 2015; Richardson, et al., 2009), industry (Richardson et al., 2009) and university perspective. However, these generally focused on qualitative measures from only one perspective and did not address the interrelationships provided by WIL.

This study addressed the application of two perspectives by incorporating three tools, for the student; an employability skills cluster matrix – developed by the authors to quantitatively measure employability skills; and a guided self-reflection, based on Gibbs Reflective Cycle, for industry; a WIL feedback form, as a mechanism to evaluate the work integrated learning experience. This evaluation was based on WIL specific to the area of community nutrition, however, the application of these tools is transferable to other sectors.

WORK-INTEGRATED LEARNING EVALUATION AND MEASUREMENT

Higher education has a responsibility to produce career-ready graduates and practicum experience provides a critical role in this preparation (Abery, Drummond, & Bevan, 2015; Jackson, 2018; Palmer, Young, & Campbell, 2018) as does the placement quality (Smith, Ferns, & Russell, 2019). However, the measure of graduate outcomes in Australia do not necessarily have a clear link to the pathway of WIL. Nor is there consistency in the language of employability skills, which would likely reduce the prioritization of industry recognized language of employability skills embedded in WIL discussions (Australian Government Department of Education and Training, 2017).

WIL evaluation is a measure of impact as well as a mechanism of quality assurance and improvement (Stirling et al., 2016) but is under-developed. Researchers, recognize there is a paucity of effective

approaches to evaluate WIL (Bosco & Ferns, 2014; Hajšlová et al., 2005; Jackson, 2013; Palmer et al., 2018; Smith, 2012; Usher, 2012). Richardson et al. (2009) stated the importance of including critical reflection to provide an opportunity to enrich the students WIL, whilst Smith (2012) recognized the importance of a quantitative measure to evaluate the WIL experience more fully and went on to develop an evaluative framework.

There is a variety of WIL measurement tools identified within the literature but many of these have limitations, including Martin's (1996) who developed a work experience questionnaire, to measure variation in effectiveness of the work placement components in university courses and student learning. Freestone et al. (2007) utilized a menial tasks scale which asked planning students for their views on WIL. This tool did not measure the pedagogically relevant domains and was seen as flawed by Smith (2012). These tools related to curricula content rather than WIL, and they lacked a mechanism for industry feedback which was seen as important by numerous authors (Jackson, 2014; Richardson et al., 2009; Smith, 2012, 2014). In addition the tools did not guide students to reflect on employability skills gained as a result of the WIL opportunity, including career management skills or have transferability, which is deemed critically important by one of the leading organizations that link workforce needs to young Australians, The Foundation for Young Australians (FYA) (2017).

Due to the lack of consensus on WIL evaluation, the authors suggested a combined approach, consisting of a quantitative survey to evaluate student's perception of employability skill development; student qualitative critical reflections; and industry feedback on student performance and program suitability. Therefore, this study describes the development and implementation of a WIL employability instrument to assess student WIL experience and perceived skill development. The WIL design included, qualitative and quantitative measures of student perception and industry feedback of a WIL experience in nutrition and public health students using three data capture points; 1) employability skills cluster matrix-self-assessment tool (ESCM-SAT) (Appendix A), 2) industry feedback from supervisors to develop a deeper understanding of the value of WIL; and 3) self-reflection - Gibbs reflective cycle (Gibbs 1988).

METHODOLOGY

Employability Skills Cluster Matrix - Self-Assessment Tool (ESCM-SAT) Development for Research Inclusion

A desktop audit of existing industry reports and current public employment opportunities was used to identify the breadth of employability skills required by graduates to meet industry needs. The audit identified core principles that were well recognized and four existing tools, namely the Employability Skills Self-Assessment Tool (RTI International, 2015), The New Work Mindset (The Foundation for Young Australians [FYA], 2017), Core Skills Development Framework (Department of Industry Innovation Climate Change Science Research and Tertiary Education [DIICSRTE], 2013) and Career Development Learning and Employability (Watts, 2006). These were adapted to form the new Employability Skills Cluster Matrix - Self-Assessment Tool [ESCM-SAT] (Appendix A). Consultation with university content experts confirmed relevance of tool clusters and skills. This tool was piloted across two years in the same first year nutrition undergraduate unit and a third-year nutrition undergraduate unit prior to utilization in this research. Modifications based on student, staff and content experts' feedback were made to the scoring system and the instructions relating to the application of the tool. The revised tool comprises of 24 skills under five clusters areas (communication, interpersonal skills, self- management skills, career management skills, academic skills) that utilize a five-point Likert scale 1 (low) – 5 (high). The skills were summed to give a total cluster score (15 - 30).

A low cluster score indicated a need to build skills, whereas a high cluster score suggested refinement of skills. An overall score was then calculated from the sum of the clusters (total possible score 120).

Piloting the ESCM-SAT Within a Food Literacy Education (FLE) Program, WIL Experience

Previous informal industry engagement and consultation with the Australian charitable food sector highlighted a gap in workforce capacity to build food literacy skills (Lawlis, Sambell, Douglas-Watson, Belton, & Devine, 2019). Food literacy is a term used to describe the practices associated with healthy eating, including planning and management; selection; preparation; and eating (Vidgen & Gallegos, 2014). Industry representatives from charitable food organizations discussed the need for additional support and considered partnerships with Australian universities to assist in remedying this gap (Lawlis et al., 2019). Building upon these discussions and universities focus for WIL opportunities, an opportunity to design an industry informed study using a food literacy WIL program to benefit sector stakeholders, universities and students was created.

The Food Literacy Education (FLE) program was integrated into a third year undergraduate Community Nutrition subject to build real world experience, develop employability skills and build student relationships with charitable food organizations. Based upon the train-the-trainer approach (Baker, Brownson, Dreisinger, McIntosh, & Karamehic-Muratovic, 2009; Marks, Sisirak, & Chang, 2013; McClelland, Irving, Mitchell, Bearon, & Webber, 2002; Yarber et al., 2015), the FLE was informed by experiential learning theory (Kolb, 1984) and student-centered and situated learning theory (Jackson, 2015; Taylor & Hamdy, 2013). The train-the-trainer approach has been shown to be a successful model to address capacity gaps in public health areas and programs (Baker et al., 2009; Yarber et al., 2015). Training students builds capacity to on-deliver to client groups (McClelland et al., 2002), increases confidence of students to deliver a community education strategy and improves food literacy of clients (Marks et al., 2013).

Kolb's model of experiential learning (Association of Graduate Programs in Public Health Nutrition, 2002; Kolb, 1984; Mortimer, 2017) relies on the individual learning through experience, both personal and environmental, and includes learning through observation, interaction and reflection. It is understood that knowledge gain improves when the individuals actively participate in the experience; have the opportunity to reflect on the experience; are provided with the skills to conceptualize the experience; and are able to innovate during the experience (Foster & Yaoyuneyong, 2016; Helyer, 2015). The experiential learning theory is framed around four dimensions which directly relate to the WIL opportunity as identified in brackets after each dimension in the following sentences. These dimensions include concrete experience (feelings; individual experience, students previously learnt in their course and theoretical components); reflective observation (practical activities and learning through observation); abstract conceptualization (thinking; student independent investigations and development of training program in collaboration with industry group); and, active experimentation (doing; delivery of food literacy session with reflection) (Kolb, 1984; Stirling et al., 2016; Taylor & Hamdy, 2013) (Figure 1). In this FLE program the train-the-trainer and student-centered learning approaches allowed students to be responsible for planning, conducting, innovating and evaluating their own learning (Taylor & Hamdy, 2013).

Prior to their WIL experience students were trained in food literacy education which comprised a combination of theoretical and practical activities delivered over three, 3-hour face-to-face sessions, within the university unit, followed by delivery of a contextualized food literacy session conducted at a charitable organization by the students (WIL component) (Figure 1). The theoretical content included

conducting a needs analysis; program planning; the state of play of Australian household food insecurity; mental health training; and the principles of food literacy. Students were trained in practical activities that aligned to key food literacy competencies from the Vidgen and Gallegos (2014) food literacy model. Student groups were placed with charities that supported clients with a range of abilities, including; people with disabilities, women escaping domestic violence, and the homeless. Students contextualized a food literacy session to deliver to clients under supervised conditions.

Recruitment

Students undertaking a nutrition major and enrolled in a third year undergraduate Community Nutrition subject at an Australian University (n=19) were invited to participate in the FLE strategy. Ethics approval was obtained from the University Human Research Ethics Committee (20088). Consent to participate was obtained from all students and organizational supervisors.

Measurement Tools - Employability Skills Cluster Matrix - Self-Assessment Tool (ESCM-SAT), Industry Feedback and Reflective Practice

The study design used a multiple method approach comprising three phases. In phase 1, students were asked to self-assess their employability skills using the ESCM-SAT, prior to the start of the FLE program (Fig 1). In phase 2, charities' supervisors were asked to observe student-client interactions, assess student knowledge and skills and provide feedback using an evaluation sheet. This evaluation comprised a series of statements about the delivery of training, audience participation and professional communication with a five-point Likert response scale (1=Poor, 2=Fair, 3=Average, 4=Good and 5=Excellent) and, open ended questions about knowledge, potential improvements and quality. In phase 3, the students were required to reassess their skills using the ESCM-SAT at the completion of the FLE program in addition to reflecting upon their experience using the Gibbs reflective cycle (Gibbs, 1988). The reflective cycle prompts students to expand their reflective vocabulary through six reflective stages: description; feelings; evaluation; analysis; conclusion and action plan (Gibbs, 1988).

Data Analysis

Reliability of the ESCM-SAT tool was tested using Cronbach's alpha coefficients for all skills within each cluster and factor analysis was conducted to evaluate the importance of each cluster to the employability skills construct. Post-hoc power calculation suggests that the sample is adequately powered and has at least 89% power to detect the 'large' effect sizes noted in the study.

For ESCM-SAT, data analysis was conducted using IBM SPSS (Armonk New York, United States, Version 23 statistical management system). Wilcoxon signed rank test for ordinal data, which was related, was used to assess the change in student perception within each cluster and the total score of the ESCM-SAT. Significance was achieved if $p < 0.05$. Based on recommendations that an effect size (ES) should always be included when a p value is given (Wilkinson, 1999), a Cohen's effect size r_c was presented where appropriate. Small, medium and large effects are defined by 0.1, 0.3 and 0.5, respectively (Cohen 1998). The effect size is an important outcome for empirical studies (Lakens, 2013).

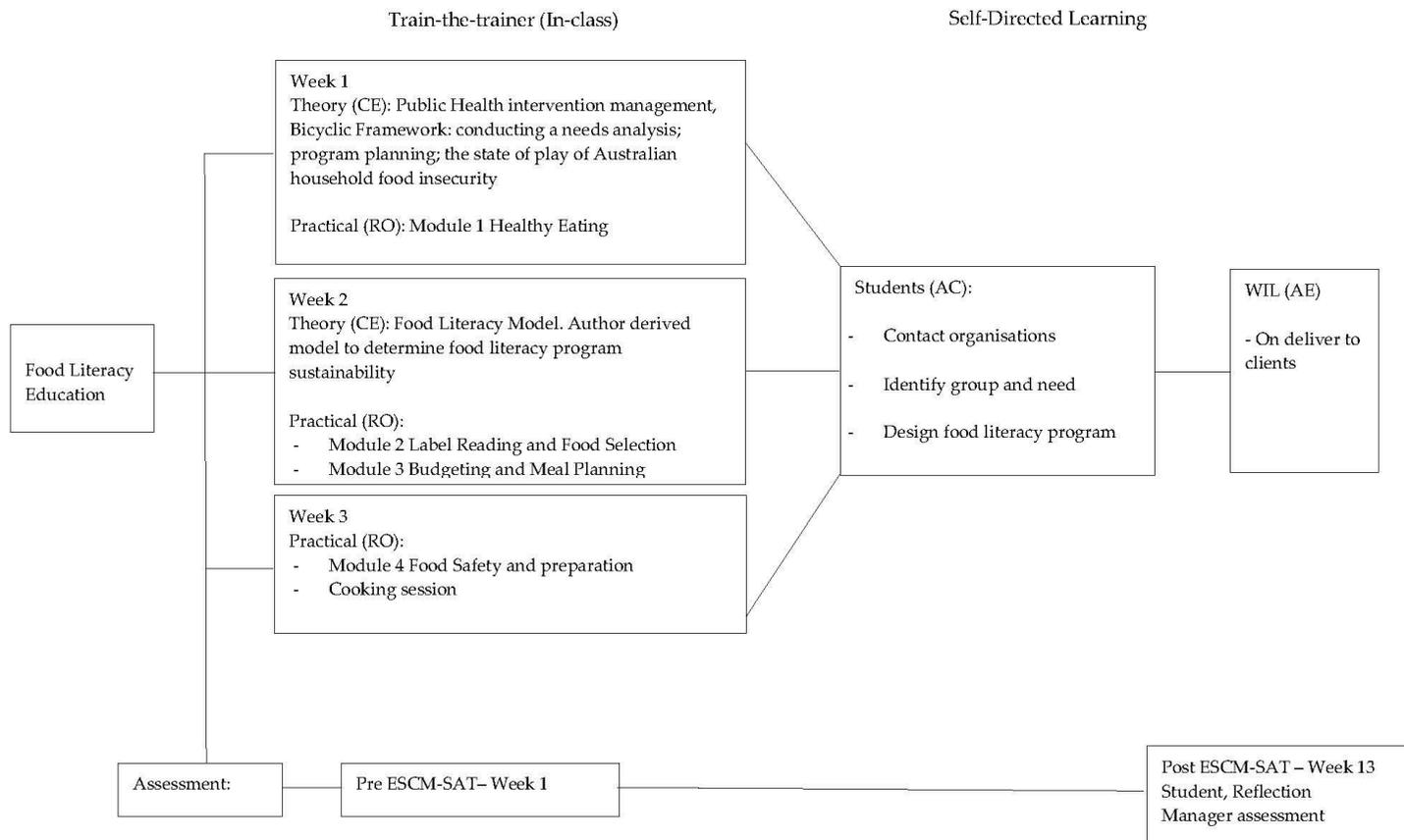


FIGURE 1: Structure of the Food Literacy Training (FLE) framed by the four dimensions of the experiential learning theory (CE – Concrete Evidence, RO – Reflective Observation, AC – Abstract Conceptualization and AE – Active Experimentation)

Two approaches were used to analyze the supervisor feedback data: average and percentage responses was calculated for each quantitative item and pooled across supervisors. Open ended responses were manually analyzed due to the structured nature of the questions and the short responses provided. Responses to each question were themed and reported.

The qualitative responses from the students use of Gibbs reflective cycle (Gibbs, 1988) were entered into NVivo (Version 11 QSR International) to support thematic analysis. Parent nodes were based on the six stages of the reflective cycle and content and thematic analysis of the student reflection was conducted by all authors independently then cross-referenced to derive final themes.

The research team included three mixed method researchers and a statistician with experience in health, nutrition, and higher degree education. Thematic analysis was the chosen strategy for this component of the research and has been described as a “foundational method for qualitative analysis” and is well-regarded due to its flexibility (Braun & Clarke, 2006).

RESULTS

Employability Skills Cluster Matrix - Self-Assessment Tool (ESCM-SAT) Reliability

The reliability of the ESCM-SAT was tested using Cronbach’s alpha coefficients for all skills within each cluster and ranged from medium to high (0.62-0.83). Factor analysis demonstrated that each cluster was equally important to the employability skills construct (communication, interpersonal skills, self-management skills, career management skills, academic skills – factor loadings: 0.245, 0.264, 0.226, 0.202, 0.258, respectively).

Change in ESCM-SAT Post-WIL Opportunity

All 19 students enrolled in the Community Nutrition subject participated. Based on analysis of paired pre and post responses there was a significant improvement in the overall total ESCM-SAT score (Median: +20 points, IQR: +10 to +32 points (Table 1). Table 2 shows the change in employability skill development by skill and cluster for: communication skills ($Z=3.41$, $p=0.001$, $r_c =0.55$); Interpersonal skills ($Z=3.06$, $p=0.002$, $r_c =0.50$); self-management skills ($Z=3.44$, $p=0.001$, $r_c =0.56$); career management skills ($Z=3.84$, $p<0.001$, $r_c =0.62$), and academic skills ($Z=3.69$, $p<0.001$, $r_c =0.62$).

Career Management Skills cluster showed the greatest positive difference followed by Academic, Communication, Interpersonal and Self-management Skills clusters respectively (Table 2). All skills within the Career Management Skills cluster improved significantly (all $p<0.01$ and $r_c >0.5$), with the highest of the three skills being, ‘Developing and managing my career’ (16 out of 19 improved, $p<0.001$, $r_c =0.58$). No student regressed in this cluster. Similarly, there was no regression in Self-management Skills, although the overall level of improvement is not as prominent (r_c ranging from 0.4 – 0.56). The strongest improvement (14 out of 19) was observed in the ‘Initiative skill’ (Table 2). Within the remaining clusters, change in skills ranged from significant ($p<0.05$) to a strong significance ($p<0.01$). The most notable level of improvements (13 out of 19) in the Academic Skills cluster, was associated with ‘Linking learning to employability’ and ‘Research’ (both $p=0.001$, $r_c >0.50$). Communication Skills cluster demonstrated a more positive effect in; ‘Clarity and concision’ and ‘Oral’ (both $p=0.001$, $r_c >0.50$). Skill components within the Interpersonal Skills cluster demonstrated an equal level of significance with only one out of 19 students reporting a regression in each of the cluster areas except ‘Conflict management’ (all $p<0.05$ with effect sizes ranging from medium ($r_c =0.32$) to large ($r_c =0.50$)).

TABLE 1: Change in student self-reported employability skills using the Employability Skills Cluster Matrix–Self Assessment Tool (ESCM-SAT).

Statement[#]	Pre-Median (IQR)	Post-Median (IQR)
Communication (Total/30)	21.00 (5.25)	25.00 (5.00)
Written	3.00 (1.00)	4.00 (1.00)
Oral	3.00 (1.00)	4.00 (1.00)
Listening	4.00 (1.00)	5.00 (1.00)
Clarity and concision	3.00 (1.00)	4.00 (1.00)
Information literacy	4.00 (1.00)	4.00 (0.00)
Digital literacy	3.00 (2.00)	4.00 (2.00)
Interpersonal Skills (Total/30)	21.00 (5.00)	26.00 (4.00)
Emotional intelligence 1	4.00 (1.00)	4.00 (1.00)
Emotional intelligence 2	4.00 (1.00)	4.00 (1.00)
Collaboration	4.00 (1.00)	5.00 (1.00)
Teamwork	4.00 (0.00)	5.00 (1.00)
Leadership	3.00 (2.00)	4.00 (1.00)
Conflict management	3.00 (2.00)	4.00 (2.00)
Self-management Skills (Total/15)	9.50 (3.75)	12.00 (3.00)
Planning and organizing	4.00 (2.00)	5.00 (1.00)
Initiative	3.00 (2.00)	4.00 (1.00)
Adaptability	3.00 (2.00)	4.00 (2.00)
Career Management Skills (Total/15)	8.00 (3.75)	12.00 (3.00)
Understanding and developing self	3.00 (2.00)	4.00 (0.00)
Exploring life, learning and work	2.00 (1.00)	4.00 (1.00)
Developing and managing my career	2.00 (1.00)	4.00 (2.00)
Academic Skills (Total/30)	18.50 (4.88)	24.00 (3.00)
Research	3.00 (2.00)	4.00 (2.00)
Critical thinking	3.00 (1.00)	4.00 (0.00)
Problem solving	3.00 (1.00)	4.00 (0.00)
Reflection	3.00 (1.00)	4.00 (1.00)
Commercial awareness	3.00 (1.00)	4.00 (1.00)
Linking learning to employability	3.00 (1.00)	5.00 (1.00)
Total Score (/120)	76.00 (19.50)	101.00 (13.00)

Supervisor Feedback

Supervisors completed student feedback forms after delivery of the food literacy sessions. Students were assessed on three components: 1. Delivery of training; 2. Audience participation and 3. Professional communication. The performance criteria embedded in these components used a five-point Likert response scale (1=Poor, 2=Fair, 3=Average, 4=Good and 5=Excellent). Where the average fell between two response points on the Likert scale the outcome is represented by linking the response points, for example an average of 4.5 is represented as “good-excellent”. Results for 17 of the 19

students with two students not submitting the supervisor feedback found on average the students achieved an assessment of “good” for Delivery of training, three (18%) students achieved an “excellent” rating by the supervisors for training, nine (53%) students received a “good to excellent” rating and five (29%) students an “average to good” rating. For Audience participation, students were assessed as “good” with four (24%) students achieving an “excellent” rating, eleven (65%) students a “good to excellent” rating and two (11%) students an average rating. For the third component, Professional communication, students on average were assessed as “good”. Three (18%) students achieved an “excellent” rating, eleven (65%) students a “good to excellent” and three (18%) students an “average to good” rating.

Responses to open ended questions supported the quantitative data suggesting students were well organized, adaptable, approachable and engaged. Improvements included communication, preparation and organization skills; in particular using an audible voice, giving positive feedback to clients, providing an explanation of the program and gaining a deeper understanding of the target group prior to the session. Client feedback to supervisors stated that they had found the session useful and enjoyed the food they had cooked.

Student Reflective Practice

All students provided a reflection using the Gibbs Reflective Cycle (Gibbs, 1988) which enabled a deeper discussion extending the narrative of each stage.

The key themes identified under ‘*Description*’, included processes of organization and planning including set-up, management and activities of the session; goals; teamwork; self-awareness; connecting with clients; and, links to employability skills.

The students described their difficulties, uncertainties and emotions in developing and presenting the session, and their apprehension as to how their session would be received by the participants. Each

group approached their session differently, with many incorporating a variety of strategies and activities to support their readiness to deliver and ensure some level of confidence, such as establishing participant and student goals and expectations, visiting the presentation environment prior to delivery, ensuring they had all the required resources by cross checking against a comprehensive learning plan and seeking advice:

I wasn’t sure what to expect from our first visit. After visiting for the first time . . . I expected our presentation to be well absorbed but was apprehensive and wasn’t sure what personalities to expect and the types of questions we’d receive. I expected the cooking part of it to be well received and enjoyed. I was unsure how the activities would be done by all and whether they’d enjoy doing them. (Student 10)

All students commented on their group performance as a team with many stating the importance of supporting team members to ensure the session ran smoothly, Student 5 made comments about their partner “They were anxious about presenting.” and offered support, “I allowed her to choose the activity that she felt most comfortable to present after me.”

TABLE 2: Change in student perception in employability skill development across the areas; Career Management, Academic, Communication, Interpersonal and Self-management Skills. Based on difference in pre and post ESCM-SAT scaled measure, 1(low)-5(high). n=19.

	Regression	No change	Improvement	Z	p	Cohen's r _c
Career Management Skills (Total/15)	0	0	19	3.839	<0.001**	0.62
Understanding and developing self	0	6	13	3.269	0.001**	0.53
Exploring Life, learning and work	0	5	14	3.384	0.001**	0.55
Developing and managing my career	0	3	16	3.596	<0.001**	0.58
Academic Skills						
(Total/30)	1	0	18	3.688	<0.001**	0.60
Research	0	6	13	3.286	0.001**	0.53
Critical Thinking	1	5	13	3.153	0.002**	0.51
Problem solving	0	8	11	3.066	0.002**	0.50
Reflection	2	4	13	2.924	0.003**	0.47
Commercial Awareness	1	6	12	2.571	0.010*	0.42
Linking learning to employability	0	6	13	3.235	0.001**	0.52
Communication						
(Total/30)	1	1	17	3.405	0.001**	0.55
Written	0	8	11	3.127	0.002**	0.51
Oral	1	3	15	3.345	0.001**	0.54
Listening	1	10	8	2.309	0.021*	0.37
Clarity and concision	1	4	14	3.231	0.001**	0.52
Information literacy	1	9	9	2.530	0.011*	0.41
Digital literacy	0	10	9	2.754	0.006**	0.45
Interpersonal Skills						
(Total/30)	1	2	16	3.06	0.002**	0.50
Emotional intelligence 1	1	9	9	2.486	0.013*	0.40
Emotional intelligence 2	1	9	9	1.964	0.050*	0.32
Collaboration	1	8	10	2.653	0.008**	0.43
Team Work	1	10	8	2.309	0.021*	0.37
Leadership	1	5	13	3.090	0.002**	0.50
Conflict Management	0	8	11	2.994	0.003**	0.49
Self-management Skills						
(Total/15)	0	4	15	3.44	0.001**	0.56
Planning and organising	0	12	7	2.460	0.014*	0.40
Initiative	0	5	14	3.442	0.001**	0.56
Adaptability	0	7	12	3.140	0.002**	0.51
TOTAL	1	0	18	3.623	0.001**	0.59

Note: Wilcoxon Signed Ranks Test: * Significance $p < 0.05$ ** Significance $p < 0.01$

The reflections showed a strong theme of students wanting to “connect” with the participants before, during and after the session. Student 9 demonstrated this in the following comment, “We arrived early as a team which meant that we are able to sit down and a really connect with the people who were going to be participating in our presentation.”

The initial interaction with the clients, was seen as an ‘ice breaker’ for the students, which led to an increase in self-awareness, with some linking back to their employability skills. Student 5 noted, “My food literacy presentation to [withheld] provided me with opportunities to increase and develop my employability skills in many areas. In particular, oral and listening communication skills, emotional intelligence and self-management skills.”

The second stage captured the student thoughts on their feelings leading up to, during and post presentation. The students’ exhibited positive and negative feelings. In relation to positive feelings, students reported being mostly confident, empowered, proud of their work, happy, excited and stated they enjoyed the overall experience, in particular, the interaction with the client group;

I am left with a feeling of accomplishment, positivity and pride over the session that my team member and I delivered, as I believe we achieved our goal ... as seen by the great amount of interaction and positive feedback given to us by the clients. (Student 14)

Many of the students felt nervous about delivering a presentation to a large group:

I felt nervous as I’ve never completed an assignment outside of the University before or worked alongside people with disabilities. I went into the session with an open mind ...All four of my team members felt the same nervousness, but we all supported each other and kept one another positive before we began presenting. (Student 15)

Students reported negative feelings such as being overwhelmed, uncomfortable and frazzled. Other students found the session confronting in terms of the level of disadvantage of some client groups. Student 13 captured this by saying “Not disappointment in how the session went but disappointment that these women have had such an unfair experience in life and disgust that domestic violence is so prevalent within our society”.

When students were asked to evaluate the session and discuss their insights into the success and failures of the session, the following key themes emerged: challenges and overcoming them; identification of personal strengths; teamwork; and, the process of conducting a smooth session:

The session ran very smoothly . . . with the timeframe and our prepared session and conversations. The down point of the session was the introduction didn’t provide a clear pathway for what the session was to entail and a couple of questions that didn’t inspire responses from the participants. The challenging thing about the session was being mindful and ensuring no one was offended or uncomfortable. (Student 13)

In the analysis part of the reflection students discussed their past experiences and personal assumptions. Six key themes were evident including: influence of past experiences; WIL enhancing student learning; building client relationships; positive experience for the clients; and dispelling prior assumptions.

I felt that my previous experience as a primary school teacher provides me with the innate ability to be able to engage with a large group of unique individuals and keep them involved, . . . being able to remember names and use these regularly when talking . . . (Student 7)

Students commented on the rapport they established with the group, several students discussed forming positive relationships with the participants, in particular, Student 4 stated “I got to talk with most of the clients and develop a positive relationship with them and this further illustrated the enjoyment of the session and their love for nutritious, delicious food.”

A strong theme to emerge from the student reflections related to a positive experience for the clients;

I would describe the experience of the client’s during this session to be a highly positive one, based on the level of engagement they had, the evaluation forms and the numerous one-on-one conversations my team member and I had with members of the group after the session. (Student 14)

Students demonstrated the ability to critically reflect and incorporate this into future activities, they could see that further experience would benefit the quality of what they could deliver. Student 3 suggested that “In the future if I give a presentation to a group of people I haven’t met, I will definitely try and get the opportunity to arrive early and mix with them prior to starting the session.”

Four out of the 19 students specifically commented on the WIL challenging their preconceived assumptions of participants, discussed below;

I had this preconceived idea that homeless people are not kind, funny and are always upset all the time. I was astonished by the fact that these clients were like regular people, they were helpful, funny and very cheerful which was terrific to see, that despite their problems they still have time to laugh and have fun. I also had this assumption that homeless people had no jobs, some of the clients had jobs and hearing some of their stories from work were amazing. Lastly, I assumed too that homeless people had no plans for the future, and once again I was surprised to hear that they also had plans for the future. Some of them had hopes of buying a house. (Student 6)

The overriding theme of the student’s conclusion, in the reflection, was that this WIL experience had given them more confidence to work with vulnerable groups again, the students had made an observation of purposeful interaction and there was further clarification that this WIL experience had broadened their thinking and validated their career choice and future options, Student 7 said, “As a result of this experience I would certainly say I feel considerably more confident in my own abilities to plan, design and particularly implement a nutrition education program. Student 15 mentioned, “My overall thinking about working out in a professional environment from this experience, my attitudes have become a lot more positive in stepping out of my comfort zone.”

Students reported a variety of actions, including; building skill gaps and seeking mentoring and volunteering opportunities. Student 15 said “I like to have the opportunity to be mentored by someone I admire professionally, but also someone that I would feel comfortable to ask for assistance when I’m in need of guidance.” Student 1 also reflected they would be interested in gaining more experience, “I would also like to gain more work experience with nutrition in mental health as that is my target group I wish to help and work with nutritionally.”

Overall there was a strong sense of value and confidence that the students had gained from the training, session development, industry engagement and reflection. Students reported a sense of increased openness to evaluation; and recognized the value of university academics and the ability to continue self-reflection for skill development. Student 8 highlighted the value of evaluation, "It is very useful to always be evaluated throughout presentations. That way I was able to reflect on my performance and be able to observe which criteria needs improving and which criteria is good." Further to, Student 8 acknowledged the value of exposure to WIL opportunities:

I have had [name withheld] as my lecturer/mentor this semester, which has allowed me to open my knowledge and understanding in Community Nutrition. She has taught me more than I ever knew about food literacy and how to incorporate this into disadvantaged communities to be able to allow others to learn new knowledge. (Student 8)

DISCUSSION

This paper has described and assessed a unique undergraduate WIL opportunity, the FLE program, and its impact on students' perceptions relating to employability skill development and its potential to build capacity for an under-resourced sector in the wider community. It is well recognized that the ability of students to proactively develop, adapt and repackage their strengths is a critical part of employability (Jackson, 2013; Jorre de St Jorre & Oliver, 2018; Monteiro, Ferreira, & Almeida, 2018). The FLE program facilitated many components of WIL based on experiential, situated and reflective learning, including reflective observation. Industry capacity can be built through engagement with the tertiary sector through this type of program. A study conducted by Elijido-Ten and Kloot (2015), which evaluated the impact of experiential learning between students and industry, found that WIL programs could enhance employment outcomes. This is also evidenced in research that measures the effectiveness of situated learning in the discipline of accounting, (Stanley, 2017) and suggests WIL is critical for universities to support employability outcomes for students.

One school of thought around WIL discusses situated learning, where learning is deepened when engaging with community in a relevant way that aligns with curricula teachings (Jackson, 2015). Capability of university students can be strengthened by students demonstrating their skill set in an industry setting (Jorre de St Jorre & Oliver, 2018). The supervisors' evaluation provided an opportunity for industry to evaluate the students' abilities in food literacy knowledge and presentation skills. This was two-fold in its outcomes in that industry groups could see first-hand the translation of theoretical teachings coupled with building resilience in students to constructive criticism, thus demonstrating this as a suitable mechanism for professional and personal development and skill broadening. Students expressed the sense of value and purpose they felt as a result of the interaction they had with the supervisors and participants. However, students need to be well prepared to align with supervisor expectations to increase the value that supervisors place on these collaborative opportunities (Nevison, Cormier, Pretti, & Drewery, 2018). Further to this WIL opportunity modelled a level of social corporate responsibility by both sectors to improve the outcomes of marginalized groups, thus supporting core public health principles of reducing inequalities (Reinhard, Osburg, & Townsend, 2010).

Reflection is a critical part of student learning in higher education and has been considered a gap by student graduates (Quinton & Smallbone, 2010). Student reflection provided the greatest insight as to the true significance of WIL opportunities which was further supported by the ESCM-SAT findings. Students believed that their career management skills were strengthened, and this was demonstrated by a sense of confidence and a belief that they could apply and extend their skills in a real-world

environment and build from their concrete experiences. Students also reported linking their university learnings with employability and this was captured in their reflections when they reported the value of academics and the sense of empowerment through knowledge transfer to others, thus experiencing and recognizing the intrinsic value of community engagement through active experimentation (Ruge & McCormack, 2017). There was evidence that students found relevance in the WIL opportunity, transferability of skills into future employment and the benefit of reflection in their future careers (Leong, 2009). Freudenberg, Cameron, and Brimble (2011) further supports the theory that WIL embedded into undergraduate degrees will improve self-efficacy and a student's understanding of themselves.

Pre and post assessment of the WIL experience utilizing the ESCM-SAT highlighted the importance of student self-assessment and how students valued each of the clusters as equally important to their sense of building employability skills. This is supported by research conducted by Wilton (2012). The evaluation of the WIL, in this research, was able to quantitatively identify that students gained the most confidence in developing and managing their career and the associated tasks. They identified they were more confident to participate in work placements and volunteering. Students utilized ESCM-SAT language appropriately in their final reflections thus demonstrating an understanding of the purpose and application of the cluster components. The transferability of the ESCM-SAT provided students with a structured iterative process to build employability skills beyond the WIL opportunity.

WIL can be an expensive inclusion in the curriculum and can place additional workload on academic staff to coordinate (Bates, 2011; Smith, 2012). There is strong evidence that no one framework evaluates WIL effectively and therefore requires multiple measures (Smith, 2012). This research integrates three tools to measure WIL, this approach is considered a suitable method to determine the merit of continued curriculum integration of WIL by the authors. Scriven (2003) recommends ongoing evaluation as it is an accepted process of determining merit.

Overall the intent of WIL is to build self-efficacy and employability skills in university students to inspire students to embrace career opportunities. There is a strong relationship between self-efficacy and academic performance according to McBeath (2018), as an outcome of WIL. While the FLE program has been specifically developed for students to on-deliver a food literacy program to clients in the charitable food sector, the program materials can be transferred to other sectors such as aged care, youth and mental health. These tools can be embedded as part of a student's assessment and are not time consuming or onerous to complete. The tools used in this study, both quantitative and qualitative, provided the opportunity for WIL experiences to be measured on their merit and determine the value of ongoing curricular inclusion for all concerned. The process of evaluation broadens a student's understanding of the contribution WIL tasks have in building their work readiness from a transdisciplinary perspective (Govender & Wait, 2017). In addition, WIL contributes to the goals of the tertiary sector to engage with industry and produce future-ready graduates.

STRENGTHS AND LIMITATIONS

Strengths of this program include: alignment with good practice strategies (Orrell, 2011); adequately preparing students; providing equitable access and additional support for international students for mutual benefit. Student challenges include inequitable input within group-work, student withdrawal and lack of student engagement. These limitations were partly addressed through having a standby placement setting, program processes that encouraged students to use teamwork strategies and peer assessment, and the ability to disperse students across projects when a team dissolved due to student

withdrawal. The small sample size used here and from one source may have resulted in a single source bias and needs to be considered. As the students are self-reflecting it is likely that there could be an over estimation of skills and ability. The post-test goes some way in remedying this as it asks students to reflect on their initial score in the ESCM-SAT and identify the tasks that justified their shift (if any) in cluster elements. Although it is not unusual to place students at the center of evaluation (Harvey & Green, 1993), it is possible that the knowledge of this measurement process meant the students more accurately reflected their skills for the pre ESCM-SAT.

CONCLUSION

The combination of a quantitative and qualitative student led WIL evaluation was able to demonstrate that students can articulate the benefits of WIL. This industry informed research addressed and identified an education gap in the charitable food sector and created working partnerships with the tertiary education sector. This in turn provided a sustainable option for the delivery of food literacy training to those in need. The study found that WIL provided an authentic learning experience that built self-reported student confidence in service provision, knowledge of specific content and abilities to interact, communicate and engage with marginalized communities for nutrition undergraduate students. It is not enough for students to undertake an embedded WIL program to 'check off' tertiary requirements. The opportunities need to be measurable, align with curricula and provide opportunity for purposeful industry engagement to build impactful partnership and relevant employability skills. The ESCM-SAT, industry feedback and student reflection measurement tools were deemed a suitable combination to measure the skill development of WIL experiences from a student perspective. The outcome could be considered twofold in that it benchmarks the quality and merit of WIL and secondly facilitates a culture of social corporate responsibility, within universities, in that it demonstrates universities can play a critical role in adding value to an under resourced community sector.

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APPENDIX A: Employability Skills Cluster Matrix (ESCM)Self-Assessment Tool (SAT)

Employability skills are a crucial component of your university learning in readiness for your professional career. The higher education sector and industry are increasing their focus on how these skills are developed and demonstrated by university students and graduates.

This Employability Skills Cluster Matrix (ESCM): Self-Assessment Tool (SAT) is designed to guide student reflection to assist in the development of your employability skills. This tool enables a student to rank their skills based on their perception. This allows students to identify gaps that require further development and it also provides a platform to gather evidence that demonstrates your employability skills in readiness for future employment opportunities.

The SAT will allow you to explore your experiences and record your perceived ability by rating your skill level now and at the end of the academic year. This will provide you with a point of reference to identify your improvements and plan for further development in areas that you have under reported.

Whilst completing the SAT think about:

- What task did you do?
- What did you learn?
- What part of this task did you do more easily?
- What part of this task required further instruction and support to complete?
- How have you transferred the skills you have learned to other tasks and activities?

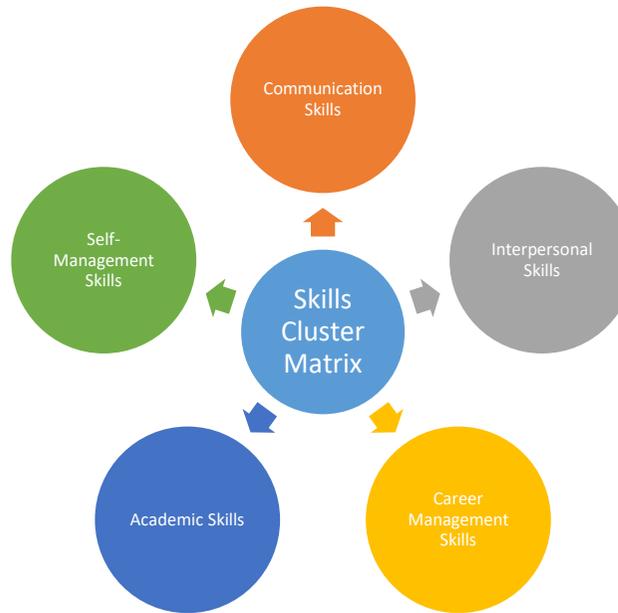


Figure 1. Employability Skills Cluster Matrix (ESCM)

Communication Skills: Communication is the act of sharing and gathering information through a meaningful interaction by transferring that information for one place to another.

Interpersonal Skills: Effective interaction with other people, both individually and in groups.

Career Management Skills: The ability to source and research employment options, whilst also identifying, recording, reflecting upon and articulating your skills, knowledge and qualifications to secure suitable employment.

Academic Skills: Learning how to be a more effective learner to succeed in academic pursuits and future career aspirations.

Self-Management Skills: The ability to take responsibility and maintain motivation to keep on task, evaluate your performance and set goals for personal achievements.

Communication Skills Cluster						
Skills	For example	Rating Now Low  High	How will you improve	Evidence of skill development (University, Extra-Curricular, Employment)	Review Rating Low  High	
Written	<ul style="list-style-type: none"> ▪ Structuring an assignment; ▪ Writing in academic style; ▪ Critiquing a document; ▪ Producing written work using different mediums. ▪ Making changes to improve meaning. 	1 2 3 4 5			1 2 3 4 5	
Oral	<ul style="list-style-type: none"> ▪ Confidently explaining new concepts through presentation; ▪ Contribute ideas and opinions during study groups. ▪ Confidently design and deliver a presentation to suit a range of audiences. 	1 2 3 4 5			1 2 3 4 5	
Listening	<ul style="list-style-type: none"> ▪ Listen to others with respect during group work; ▪ Paraphrasing to demonstrate your understanding. 	1 2 3 4 5			1 2 3 4 5	
Clarity and concision	<ul style="list-style-type: none"> ▪ Ensuring ideas are clearly communicated through written and oral formats. 	1 2 3 4 5			1 2 3 4 5	
Information literacy	<ul style="list-style-type: none"> ▪ Gathering information from a wide variety of sources; ▪ Identifying points in text, whilst conducting a literature review. 	1 2 3 4 5			1 2 3 4 5	
Digital communication	<ul style="list-style-type: none"> ▪ Gathering information online; ▪ Creating professional online content via e-portfolios, blogs and social media. 	1 2 3 4 5			1 2 3 4 5	
Total:		30				30

Interpersonal Skills Cluster					
Skills	For example	Rating Now Low High	How will you improve	Evidence of skill development (University, Extra-Curricular, Employment)	Review Rating Low High
Emotional Intelligence 1	<ul style="list-style-type: none"> Identifying and managing your own emotions. 	1 2 3 4 5			1 2 3 4 5
Emotional Intelligence 2	<ul style="list-style-type: none"> Identifying the emotions of others. 	1 2 3 4 5			1 2 3 4 5
Collaboration	<ul style="list-style-type: none"> Working on a group assignment. 	1 2 3 4 5			1 2 3 4 5
Teamwork	<ul style="list-style-type: none"> Contributing to productive relationships during group activities. 	1 2 3 4 5			1 2 3 4 5
Leadership	<ul style="list-style-type: none"> Developed via volunteering, employment or university activities. 	1 2 3 4 5			1 2 3 4 5
Conflict Management	<ul style="list-style-type: none"> Dealing with difficult team members; Negotiating tasks in a group assignment. 	1 2 3 4 5			1 2 3 4 5
Total:		30			30

Self-Management Skills Cluster							
Skills	Sample Application	Rating Now Low High	How will you improve	Evidence of skills development	Review Rating Low High		
Planning & Organising	<ul style="list-style-type: none"> ▪ Creating a study plan for a unit/semester. 	1 2 3 4 5			1 2 3 4 5		
Initiative	<ul style="list-style-type: none"> ▪ Contacting a community organisation for opportunities to undertake a project; ▪ Volunteering to assist in research. 	1 2 3 4 5			1 2 3 4 5		
Adaptability	<ul style="list-style-type: none"> ▪ Completing a research project; ▪ Supporting others via mentoring programs. 	1 2 3 4 5			1 2 3 4 5		
Total:		15		Total:		15	

Career Management Skills Cluster							
Skills	Sample Application	Rating Now Low High	How will you improve	Evidence of skill development	Rating Now Low High		
Understanding and developing self	<ul style="list-style-type: none"> ▪ Completing a self-audit; ▪ SWOT analyse; ▪ Seeking a mentor. 	1 2 3 4 5			1 2 3 4 5		
Exploring life, learning and work	<ul style="list-style-type: none"> ▪ Creating a career plan; ▪ Conducting informational interviews; ▪ Developing a personal development plan. 	1 2 3 4 5			1 2 3 4 5		
Developing and managing my career	<ul style="list-style-type: none"> ▪ Gathering examples of learning and skills development; ▪ Participating in work placements and volunteering. 	1 2 3 4 5			1 2 3 4 5		
Total:		15		Total:		15	

Academic Skills Cluster							
Skills	For example	Rating Now	How will you improve	Evidence of skill development	Review Rating		
		Low  High			Low  High		
Research	<ul style="list-style-type: none"> Conducting a literature review; Applying research skills to authentic research problems. 	1 2 3 4 5			1 2 3 4 5		
Critical thinking	<ul style="list-style-type: none"> Participating in group debates; Evaluation of raw data to write an analysis based on the data. 	1 2 3 4 5			1 2 3 4 5		
Problem solving	<ul style="list-style-type: none"> Analysing case studies for a purposeful solution. 	1 2 3 4 5			1 2 3 4 5		
Reflection	<ul style="list-style-type: none"> Conducting a self-assessment; Analysing feedback; Developing a reflective log. 	1 2 3 4 5			1 2 3 4 5		
Commercial awareness	<ul style="list-style-type: none"> Completing a SWOT analysis on an organisation or sector of interest to you. 	1 2 3 4 5			1 2 3 4 5		
Linking learning to employability	<ul style="list-style-type: none"> Transfer skills to future employment 						
Total:		30		Total:		30	

Overall totals for each cluster area:

In the sections below tally your points for each of the five areas (two of the areas have been merged). If this is your first review add to initial rating total, and if this your second review please add to the review rating total. This will highlight your improvement over a period of time.

	Communication Skills	Interpersonal Skills	Academic Skills	Career Management and Self-Management Skills	Overall Total
Initial rating total	30	30	30	30	120
Review rating total	30	30	30	30	120

Prioritise 3 cluster areas to improvement over the next 6 to 12 months: Rate 1, 2 and 3

Based on your rating totals in the above 5 skill cluster areas choose three that you scored lowest in to prioritise areas to develop. To progress to a more targeted approach look back at the priority areas and review the competency you scored least in and refer to the appendix for strategies to improve these areas.



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Tools available at university that extend skills in the following areas and additional services to support development.



University Academic Skills Centre Lynda Campus Toastmaster WA	University Peer Mentoring Volunteering University Guild University Clubs and Societies	University Careers and Leadership Services University CareerHub WA Career Centre	University Academic Skills Centre University Library Online Moocs Lynda Campus University Tutor	University VolunteerHub Volunteering WA
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Employability Skills Cluster Matrix (ESCM) adapted from:

Employability Skills Self-Assessment Tool (2015). Retrieved from <http://www.ccrscenter.org/sites/default/files/Self-Assessment-Tool.pdf>

The New Work Mindset (2016). Retrieved from <https://www.fya.org.au/wp-content/uploads/2016/11/The-New-Work-Mindset.pdf>

Department of Industry, Innovation, Climate Change, Science, Research and Tertiary Education and Department of Education, Employment and Workplace Relations. (2013). *The Core Skills for Work Development Framework*. Retrieved from <https://docs.education.gov.au/system/files/doc/other/cswf-framework.pdf>

Watts, A. 2006. *Career development learning and employability*. Learning and Employability Series Two. York, UK: ESECT and HEA.