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Research Article

Welded for Work: A Tracer Study on the Career Outcomes of Welding and Fabrication Technology Graduates of Batangas State University

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ABSTRACT

This tracer study examined the career outcomes of Bachelor of Industrial Technology graduates majoring in Welding and Fabrication Technology (BIT-WFT) from Batangas State University for academic years 2021–2023. The study aimed to assess graduates' demographic and educational profiles, employment outcomes, relevance of acquired competencies, and job satisfaction, with the end goal of proposing an action plan to improve employability. Data from 55 graduates revealed that most were male, aged 20–24, and had passed NC II and NC III certifications. The employment rate was 95%, with the majority securing jobs within 2–5 months after graduation, primarily in the non-government sector as pipe welders and fabricators. AG&P emerged as the leading employer, with typical monthly salaries ranging from ₱10,000 to ₱30,000. Respondents perceived their course, curriculum, and competencies as highly relevant to their employment, particularly problem-solving, critical thinking, and human relations skills. While most graduates expressed job satisfaction, salary and growth opportunities influenced their intent to stay or change jobs. The study concludes that the BIT-WFT program is generally effective in preparing graduates for industry needs but highlights areas for curriculum alignment, professional growth, and industry partnerships.

Keywords: *Tracer study, Welding and fabrication, Employability, Curriculum relevance, Batangas State University*

Introduction

The welding and fabrication sector plays a crucial role in manufacturing, construction, and other industrial industries that drive economic growth. As technological innovations rapidly transform industry demands, higher education institutions must continually evaluate whether their graduates are equipped with both technical and transferable skills (Sichombe, 2022; Viegas et al., 2018).

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Tracer studies provide valuable feedback by monitoring graduates' employment outcomes and assessing the relevance of their academic preparation to workplace realities (Dotong, 2016; Dela Cruz, 2022). They help identify skill gaps, align curricula with industry needs, and ensure that degree programs remain responsive to global competitiveness (Cuadra et al., 2019; Romadlon & Arifin, 2021).

This study builds upon earlier tracer research (Centillas et al., 2017; Malahay & Saing, 2018; Brits & Steyn, 2019), focusing specifically on welding and fabrication graduates from Batangas State University (BatStateU). By analyzing the experiences of graduates from AY 2021–2023, this research provides timely insights into employability, job relevance, and satisfaction, while offering recommendations for curriculum enhancement and industry collaboration.

Objectives

The study aimed to trace the career outcomes of BIT-WFT graduates of BatStateU, AY 2021–2023. Specifically, it sought to: determine the demographic and educational profiles of graduates; identify reasons for pursuing the degree and further studies; assess employability in terms of employment rate, waiting time, job mobility, position, income, and work setting; examine the relevance of the course, curriculum, and competencies to employment; evaluate job satisfaction and intentions to stay or leave; and propose an action plan to enhance graduate employability.

Methodology

This study employed a descriptive tracer research design to systematically examine the employment outcomes, relevance of academic preparation, and professional experiences of Bachelor of Industrial Technology major in Welding and Fabrication Technology (BIT-WFT) graduates of Batangas State University. This design was deemed appropriate as it focuses on gathering and analyzing factual, post-graduation data that reflect the graduates' transition from academic training to the world of work. Specifically, it allowed the researchers to document the respondents' current employment status, job positions, work settings, income levels, and the relevance of the competencies and skills they acquired during their university education. The tracer design also provided means to assess job satisfaction, career mobility, and challenges encountered in the workplace, thereby generating empirical evidence on the effectiveness of the program in meeting industry demands and labor market expectations.

Subject of the Study

Table 1.
Distribution of Respondents

Academic Year	Population	Percentage (%)
2021-2022	17	30.9
2022-2023	38	69.1
Total	**55**	**100**

The study focused on all 55 graduates who completed the Bachelor of Industrial Technology program with a major in Welding and Fabrication Technology during the academic years 2021-2022 and 2022-2023. No sampling was needed due to the manageable population size, ensuring accurate and reliable data.

Descriptive research design

It was chosen to provide a detailed account of graduates' current employment situations. It depicted key aspects of their employment data, including demographic profiles, job attainment, duties, positions held, perceived usefulness of their education, and levels of satisfaction. It allowed for valuable insights into how graduates applied university-learned skills and competencies in their work.

Data gathering instrument

The study utilized the Graduate Tracer Survey Instrument (GTSI) from the university to collect data from respondents.

By addressing these aspects, the survey aimed to interpret results and draw conclusions, informing an action plan to enhance skills development and prepare Welding and Fabrication Technology graduates for employment.

Data gathering procedures

The data were carefully designed and executed to ensure accuracy, confidentiality, and ethical compliance.

Formal approval was obtained from university authorities, and advanced notifications were sent to potential respondents to secure their consent.

Researchers collaborated closely with their advisor to disseminate the questionnaire and maintain ethical standards.

An online questionnaire, administered securely, ensured respondent anonymity.

Detailed documentation was kept, and personalized follow-ups were conducted to maximize response rates.

Statistical Treatment of Data

The collected data were analysed using the following statistical tools. Frequency and percentage were used to describe the demographic profile, educational background, employment status, waiting time, job position, and work setting of the respondents.

To determine the level of relevance of the course, curriculum, and acquired competencies, as well as the level of job satisfaction, the Weighted Mean (M) was utilized. A five-point Likert Scale was used and interpreted as follows:

Scale	Range	Descriptive Equivalent
5	4.50 – 5.00	Extremely Relevant / Very Highly Satisfied
4	3.50 – 4.49	Highly Relevant / Highly Satisfied
3	2.50 – 3.49	Moderately Relevant / Moderately Satisfied
2	1.50 – 2.49	Slightly Relevant / Slightly Satisfied
1	1.00 – 1.49	Not Relevant / Not Satisfied

These statistical measures ensured accuracy, objectivity, and consistency in interpreting the graduates' perceptions regarding curriculum relevance and job satisfaction.

Results and Discussion

1. Demographic Profile

Table 2. Sex

Sex	Academic Year		Frequency	Percentage %
	2021-2022	2022-2023		
Female	2	5	7	13
Male	15	33	48	87
Total	**17**	**38**	**55**	**100**

Among the 55 surveyed graduates, 13% were female, and 87% were male, reflecting the traditionally male-dominated perception of welding and fabrication technology.

Table 3. Age

Age	Academic Year		Frequency	Percentage
	2021-2022	2022-2023		
20-24	12	32	44	80
25-29	5	6	11	20
30 above	0	0	0	0
Total	**17**	**38**	**55**	**100%**

80% of the graduates fell within the age bracket of 20 to 24 years, with the remaining 20% between 25 to 29 years old.

Table 4. Civil status

Civil Status	Academic Year 2021-2022	Academic Year 2022-2023	Frequency	Percentage%
Single	16	36	52	95
Married	1	2	3	5
Widowed	0	0	0	0
Separate	0	0	0	0
Total	**17**	**38**	**55**	**100**

95% of the graduates were single, while only 5% were married.

Table 5.
Professional examinations passed

Professional Examination Passed	Academic Year 2021-2022	Academic Year 2022-2023	Frequency	Percentage (%)
Civil service examination	0	1	1	2
NC II	8	10	18	33
NC III	6	5	11	20
PRC Examination	0	0	0	0
Not Applicable	3	22	25	45
Total	**17**	**38**	**55**	**100**

Among the graduates, 2% passed the civil service examination, with the majority passing the NC II (33%) and NC III (20%) examinations. None passed the PRC examination, and 45% indicated "Not Applicable."

2. Educational Profile

Table 6.
Reasons for taking degree

Reasons for taking degree	Academic Year 2021-2022	Academic Year 2022-2023	Frequency	Percentage (%)
Availability of course/degree offering in chosen institution	2	20	22	40
Parents influence	2	0	2	4
Peer influence	0	0	0	0
Strong passion for the profession	0	5	5	9
Prospect for immediate Employment relevant	11	3	14	25
Affordability for family	0	0	0	0
Status or prestige of profession	0	5	5	9
Prospect of career advancement	2	5	7	13
No particular choice/ no better idea	0	0	0	0
Prospect of attractive compensation	0	0	0	0
Good grades in subject matter	0	0	0	0
Total	**17**	**38**	**55**	**100**

Respondents' motivations for pursuing a degree varied. The most common reason was the availability of courses at their chosen institution (40%), followed by the prospect of immediate employment (25%). Some were motivated by career advancement opportunities

(13%), passion for their profession (9%), and associated status or prestige (9%). Parental influence played a minimal role, cited by only 4% of respondents.

Table 7. Reasons for pursuing other tertiary level qualification/ advanced studies

Reasons for Pursuing other tertiary level qualification/ advanced studies	Academic year 2021-2022	Academic year 2022-2023	Frequency	Percentage (%)
Promotion	10	3	13	24
Personal Development	3	30	33	60
Professional Development	4	5	9	16
Total	**17**	**38**	**55**	**100**

Among respondents pursuing tertiary qualifications or advanced studies, personal development was the leading motivator (60%), followed by promotion (24%), and professional development (16%).

3. Employment Data

Table 8. Employment rate

Employment Rate	Academic year 2021-2022	Academic year 2022-2023	Frequency	Percentage (%)
Employed	17	35	52	95
Not Employed	0	3	3	5
Total	**17**	**38**	**55**	**100**

Respondents showed a consistent increase of employment rate from 2021-2022 to 2022-2023, with 95% of graduates securing jobs after graduation.

Table 9. Waiting time to get the first Job

Waiting Time to get the first Job	Academic Year 2021-2022	Academic Year 2022-2023	Frequency	Percentage (%)
Less than 1 month	5	5	10	18
2-5 months	10	33	43	78
6-12 months	2	0	2	4
More than a year	0	0	0	0
Not applicable	0	0	0	0
Total	**17**	**38**	**55**	**100**

Most graduates secured their first job within 2-5 months of graduation, with very few waiting longer than 6 months.

Table 10.
Number of jobs since graduation

Number of Jobs since Graduation	Academic Year 2021-2022	Academic Year 2022-2023	Frequency	Percentage (%)
1	3	32	35	64
2	14	6	20	36
3	0	0	0	0
4	0	0	0	0
5 or more	0	0	0	0
Total	**17**	**38**	**55**	**100**

The majority of graduates had only one job since graduation, indicating satisfaction and stability in their employment.

Table 11.
Current employment status

Current Employment Status	Academic Year 2021-2022	Academic Year 2022-2023	Frequency	Percentage (%)
Permanent	5	5	10	18
Temporary	7	9	16	29
Contractual	0	18	18	33
Casual	0	0	0	0
Job Order	5	1	6	11
Self Employed	0	2	2	4
No answer/NA	0	3	3	5
Total	**17**	**38**	**55**	**100**

Various employment arrangements were observed, with a significant portion in contractual and temporary positions.

Table 12.
Current position/designation

Current Position/designation	Academic Year 2021-2022	Academic Year 2022-2023	Frequency	Percentage (%)
Pipe Welder	10	13	23	42
Fabricator	5	7	12	22
Structural Welder	0	5	5	9
Mig Welder	2	6	8	15
Pipe fitter	0	4	4	7
No answer/NA	0	3	3	5
Total	**17**	**38**	**55**	**100**

Pipe welder was the most common current position, followed by fabricator and structural welder, reflecting the specialization of the graduates.

Table 13.
Current company/employer

Current Company/Employer	Academic Year 2021-2022	Academic Year 2022-2023	Frequency	Percentage (%)
AG&P	10	12	22	40
JG SUMMIT	5	7	12	22
AMKOR	0	5	5	9
MITSUBISHI POWER	0	4	4	7
EEI CORPORATION	2	5	7	13
RCC	0	2	2	4
No answer/NA	0	3	3	5
Total	**17**	**38**	**55**	**100**

AG&P emerged as the top employer, employing 40% of the respondents, followed by JG Summit and others.

Table 14.
Gross monthly income

Gross Monthly Income	Academic Year 2021-2022	Academic Year 2022-2023	Frequency	Percentage (%)
Less than 10,0000	0	6	6	11
10,000/20,000	12	23	35	64
20,000/30,000	3	6	9	16
30,000/40,000	2	0	2	4
40,000/50,000	0	0	0	0
50,000 up	0	0	0	0
No answer	0	3	3	5
Total	**17**	**38**	**55**	**100%**

It ranged mostly between 10,000 and 30,000 pesos with very few earning above 40,000.

Table 15.
Nature of work

Nature of Work	Academic Year 2021-2022	Academic Year 2022-2023	Frequency	Percentage (%)
Government	3	8	11	20
Non-Government	14	27	41	75
No answer	0	3	3	5
Total	**17**	**38**	**55**	**100**

Most respondents were employed in the non-government sector, in line with expectations for this field.

Table 16.
Place of work

Place of Work	Academic Year 2021-2022	Academic Year 2022-2023	Frequency	Percentage (%)
Local	17	35	52	95
Abroad	0	0	0	0
No answer	0	3	3	5
Total	**17**	**38**	**55**	**100**

All employed respondents worked locally, with none intending to work abroad.

Table 17.
Length of service in present job

Length of Service in Present Job	Academic Year 2021-2022	Academic Year 2022-2023	Frequency	Percentage (%)
1-6 Months	2	26	28	51
7-12 Months	15	9	24	44
13-18 Months	0	0	0	0
19-24 Months	0	0	0	0
25 Months	0	0	0	0
No answer	0	3	3	5
Total	**17**	**38**	**55**	**100**

The majority of respondents had been in their current job for 1-6 months, indicating relatively recent employment.

4. Relevance of the Course/Degree, Curriculum, and Competencies Acquired from the University to Their First Employment

Table 18.
Relevance of the course/degree to the first job

Is your course or degree relevant to your first job?	Academic Year 2021-2022	Academic Year 2022-2023	Frequency	Percentage (%)
Yes	13	29	42	76
No	4	9	13	24
Total	**17**	**38**	**55**	**100**

The majority of respondents (76%) agreed that their course or degree was relevant to their first job.

Table 19.
Relevance of the curriculum to the first job

Is the curriculum you have in college relevant to your first job?	Academic Year 2021-2022	Academic Year 2022-2023	Frequency	Percentage (%)
Yes	13	29	42	76
No	4	9	13	24
Total	**17**	**38**	**55**	**100**

A significant portion (76%) found the curriculum relevant to their first job, although some ended up in fields unrelated to their college studies.

Table 20.
Significance of university-acquired competencies in the first job

Competencies	Weighted Mean	Verbal Interpretation
Communication skills	4.25	Very Relevant
Human Relations Skills	4.69	Extremely Relevant
Entrepreneurial Skills	4.27	Very Relevant
Information Technology Skills	4.59	Extremely Relevant
Problem Solving Skills	4.78	Extremely Relevant
Critical Thinking Skills	4.53	Extremely Relevant
Composite mean	**4.52**	**Extremely Relevant**

The competencies acquired by the BIT-WFT graduates were found to be Extremely Relevant to their first job, as indicated by the composite weighted mean of 4.52, which falls within the highest category of the interpretation scale. Among the competencies assessed, problem-solving skills (M = 4.78) obtained the highest rating, followed by human relations skills (M = 4.69), information technology skills (M = 4.59), and critical thinking skills (M = 4.53), all of which were interpreted as Extremely Relevant. Meanwhile, communication skills (M = 4.25) and entrepreneurial skills (M = 4.27) were rated as Very Relevant, still reflecting a strong positive contribution to graduates' workplace performance. These results confirm that the BIT-WFT program effectively develops both technical and soft skills that are highly aligned with the actual demands of the welding and fabrication industry, significantly supporting graduates' employability, adaptability, and efficiency in their professional roles.

5. Job Satisfaction Data of the Respondents

Table 21.
Intention to stay in the present job

Do you intend to stay?	Academic Year 2021-2022	Academic Year 2022-2023	Frequency	Percentage (%)
Yes	13	28	41	75
No	4	7	11	20
No answer	0	3	3	5
Total	**17**	**38**	**55**	**100**

The majority of respondents (75%) expressed an intention to stay in their present job, indicating a general satisfaction with their current employment situation.

Table 22.
Reasons for staying in the job

Reasons for staying in the present job	Academic Year 2021-2022	2022-2023	Frequency	Percentage (%)
Salaries and wages	4	3	7	13
Growth and Development	3	9	12	22
Related to special skills	2	5	7	13
Experience	4	11	15	27
Family and Peer Influence	0	0	0	0
Proximity to Residence	0	0	0	0
No answer	4	10	14	25
Total	**17**	**38**	**55**	**100**

These varied, with experience being the most common factor cited (27%), followed by salaries and wages (13%) and the opportunity to use special skills (13%). However, a significant portion did not answer the question, possibly indicating uncertainty or dissatisfaction.

Table 23.
Reasons for changing the job

Reasons for not staying in the present job	Academic Year 2021-2022	2022-2023	Frequency	Percentage (%)
Salaries and wages	2	3	5	9
Growth and Development	1	2	3	5
Acquired other related work experience	1	1	2	4
Family and peer Influence	0	1	1	2
No answer	13	31	44	80
Total	**17**	**38**	**55**	**100**

These included dissatisfaction with salaries and wages (9%), lack of growth opportunities (5%), and a desire for different work experiences. Family and peer influence also played a minor role. The majority did not answer, suggesting contentment with their current job or unemployment status.

6. Proposed Action Plan

The Proposed Action Plan was formulated directly from key findings of the study. The high level of salary and career growth dissatisfaction necessitates focused interventions on Career Advancement strategies. The prevalence of contractual employment justifies the inclusion of Job Placement and Industry Partnership programs. Moreover, the strong confirmation of curriculum relevance calls for sustaining and modernizing current training through Curriculum Enhancement and Technological Upgrading, while the gender imbalance (87% male) highlights the need for inclusive recruitment strategies. Thus, every proposed strategy in Table 24 is grounded on specific data trends revealed in this tracer investigation.

Table 24. Proposed Action Plan

Areas of Concern	Objectives	Strategies	Persons Involved	Expected Outcomes
Gender Disparity	Increase female representation in WFT field.	Implement career guidance programs targeting female students at high schools.	Faculty members, industry professionals, student councils	Increased female enrollment in WFT programs.
		Offer scholarships specifically for female students entering WFT programs.	Academic advisors, scholarship committees	Balanced gender ratio among WFT graduates.
Curriculum Relevance	Ensure curriculum alignment with industry needs	Conduct regular surveys and consultations with industry experts to update curriculum.	Academic department heads, industry liaisons	Updated curriculum reflecting industry demands.
		Introduce internships or cooperative education programs with industry partners.	Internship coordinators, industry mentors	Enhanced practical skills and industry exposure for students.
Job Placement	Increase employability and job retention rates.	Provide career counseling and job placement services to graduating students.	Career counselors, placement officers	Higher percentage of graduates securing employment post-graduation.
		Establish partnerships with local companies for job placement and internship opportunities.	Industry liaisons, placement coordinators	Increased job placement rates and internship opportunities.
Skill Development	Enhance competencies aligned with industry trends.	Offer additional certification courses on emerging technologies in welding and fabrication.	Industry experts, academic faculty	Graduates equipped with up-to-date skills and certifications.
		Provide hands-on training using state-of-the-art equipment and technology in labs.	Lab instructors, equipment managers	Practical skills development in line with industry standards.
Career Advancement	Facilitate opportunities for career growth.	Establish mentorship programs connecting recent graduates with industry professionals.	Alumni associations, industry mentors	Guidance and support for career advancement prospects.
		Organize workshops and seminars on professional development and networking skills.	Career development officers, industry experts	Enhanced career progression prospects for graduates.

The proposed action plan aimed to enhance the competencies and readiness of Bachelor of Industrial Technology majors in Welding and Fabrication Technology in the field of work by addressing curriculum alignment, career development, salary review, professional growth, and feedback mechanisms.

Discussion

The reported salary range of ₱10,000–₱30,000 must be interpreted against the regional minimum wage in CALABARZON, which is substantially lower than the upper limit of the respondents' income. However, when compared to the average salary of skilled welders

in private industrial firms, this range remains modest, thus objectively supporting the respondents' reported dissatisfaction in terms of financial compensation. While the income is above minimum wage, it is not fully aligned with the level of physical risk, technical expertise, and certification demanded in welding careers.

A significant finding of this study is that 45% of graduates marked "Not Applicable" for PRC/NC/Civil Service examinations. This indicates that certification is not a requirement for many of their current positions, particularly in private corporations such as AG&P, where demonstrated skill, experience, and in-house assessments are prioritized over licensure. It may also signify that some graduates did not attempt the examinations due to lack of necessity, opportunity, or awareness, which is a critical gap in professional credentialing and mobility.

While the study reflects a high employment rate (95%), the prevalence of contractual and temporary employment reveals a significant challenge to job security and long-term career stability. These contractual arrangements limit access to benefits, professional promotion, and financial resilience. Therefore, although graduates are employed, the quality of employment must be recognized as a pressing concern requiring institutional and industry-based intervention

Conclusions

The study concludes that the BIT-WFT program of BatStateU effectively equips graduates with relevant competencies, reflected in high employment rates and positive perceptions of curriculum relevance. However, challenges persist in areas of job security, career advancement, and compensation.

Recommendations

1. Strengthen curriculum-industry alignment through regular consultations with employers.
2. Expand career counseling and job placement services.
3. Introduce certification programs in advanced welding technologies.
4. Establish mentorship and alumni networking systems.
5. Provide targeted scholarships and outreach to encourage female participation.

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