

BRIDGING SKILL GAPS IN BREAD AND PASTRY PRODUCTION: INSIGHTS FOR CURRICULUM ENHANCEMENT

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ABSTRACT: *This study, identifying the Critical Skills Gaps in Bread and Pastry Production Competencies: Implications for Curriculum Enrichment, explores the specific skill gaps of Bachelor of Technology and Livelihood Education (BTLED) students at Negros Oriental State University (NORSU) across three major specializations: Industrial Arts, Home Economics, and Information and Communication Technology (ICT). It aims to profile students by year level and specialization, identify perceived gaps in Bread and Pastry Production competencies, examine learning challenges, gather enhancement suggestions, and propose a contextualized curriculum aligned with Technical Education Skills Development Authority (TESDA) standards. Using mixed-methods, descriptive-exploratory design, and the study combines quantitative data from TESDA-based surveys with qualitative data from semi-structured interviews, focus group discussions (FGDs), and curriculum document reviews. Total population sampling ensured inclusive representation across the three specializations. Results revealed four core challenges: Teamwork and Personal Factors, Resource Constraints, Instructional Gaps, and Physical Barriers. Students cited issues such as low self-confidence, group conflicts, inadequate equipment and ingredients, insufficient practice time, outdated instructional content, and physical fatigue. Thematic analysis of qualitative responses supported these findings and aligned with Human Capital Theory and Constructivist Learning Theory, highlighting the importance of experiential, relevant, and skill-aligned education. In response, the study proposes a curriculum enrichment framework that emphasizes stronger industry collaboration, alignment with TESDA standards, extended hands-on training, and improved instructional support. These measures aim to enhance technical competence, better prepare students for national certification, and close the gap between academic instruction and workforce demands in Bread and Pastry Production.*

Keywords: Bread and Pastry (BPP), Self-Assessment Guide (SAG), Bachelor of Technical and Livelihood Education (BTLED)

INTRODUCTION

In an increasingly skills-driven and competitive labor market, the alignment of academic instruction with industry requirements is critical—particularly in the field of technical and vocational education. The Bachelor of Technology and Livelihood Education (BTLED) program aims to produce competent future educators in specializations such as Industrial Arts, Home Economics, and Information and Communication Technology (ICT). One vital component of the Home Economics strand is Bread and Pastry Production, a course that demands both theoretical understanding and practical application. However, despite its relevance, a persistent skills gap between what is taught in schools and what is required by the industry continues to challenge the employability and readiness of graduates [1].

Bread and Pastry Production requires students to develop mastery in technical processes, creativity, food safety, and familiarity with industry-standard tools and methods. However, many BTLED students face difficulties in acquiring these competencies due to limited access to up-to-date equipment, inadequate laboratory facilities, lack of industry exposure, and outdated instructional content [2]. These institutional constraints not only affect student performance but also hinder their ability to meet the dynamic demands of the food service and hospitality sectors.

While several studies have explored general workforce readiness and curriculum issues in teacher education, there remains a notable gap in the literature when it comes to specific, course-based skills gap assessments, particularly in Bread and Pastry Production. For instance, Lazo highlights

the lack of skills gap analysis frameworks at the subject level, arguing that broad curriculum reforms often overlook detailed, practical competencies required in technical subjects [3]. Similarly, Dizon and Balajadia call for stronger curriculum-industry alignment but fall short of addressing specialization-specific interventions [4]. Moreover, current research largely focuses on institutional strategies and employability outcomes without systematically investigating student-perceived challenges or proposing tailored curriculum enrichment plans based on actual skill deficiencies (Torres & Rivera, 2023). This underscores the need for more contextualized, student-informed, and course-specific investigations, especially in programs that aim to equip future educators with both pedagogical and technical proficiency.

This study responds to that gap by assessing the critical skills deficiencies experienced by BTLED students in Bread and Pastry Production under the three major specializations—Industrial Arts, Home Economics, and ICT. Specifically, it aims to: (1) profile students based on year level and major, (2) identify perceived skill gaps in course competencies, (3) explore the challenges students face in learning and practicing these skills, and (4) solicit student-driven suggestions for program enhancement. The study's ultimate goal is to propose a contextualized curriculum enrichment strategy that not only addresses the identified gaps but also strengthens the link between classroom instruction and industry expectations. By addressing this underexplored area, the research contributes to ongoing efforts in making vocational teacher education more responsive, adaptive, and aligned with national and global workforce standards.

STATEMENT OF THE PROBLEM

This research is intended to identify the specific skills gaps of BTLED students under the three specializations on Industrial Arts, Home Economics, and Information and Communication programs and under specific course/topics on Bread and Pastry Production. As an output of this research, it aimed to produce a contextualized curriculum enrichment that would address the gap between learned skills and the industry standards.

1. What is the profile of BTLED students in terms of the following:
 - 1.1 year level
 - 1.2 major or specialization, and
2. What are the specific skills gaps perceived by BTLED students in Bread and Pastry Production competencies?
3. What challenges and difficulties have you encountered in acquiring the necessary skills and competencies in this subject?
4. What suggestions would you offer to enhance the implementation of program?
5. What curriculum enrichment can be proposed in BTLED under Home Economics program to address these identified gaps?

SIGNIFICANCE OF THE STUDY

This study is of vital importance as it addresses a persistent and underexplored issue in the Bachelor of Technology and Livelihood Education (BTLED) program—specifically the mismatch between acquired competencies and industry-required skills in **Bread and Pastry Production**. As this subject is foundational to the Home Economics specialization and relevant to Industrial Arts and ICT tracks, identifying and addressing skills gaps directly contributes to the quality and relevance of teacher training in technical-vocational education.

The significance of this study is outlined as follows:

For BTLED Students: This study offers students an opportunity to express their experiences, challenges, and skill development needs in Bread and Pastry Production. By highlighting these issues, the research promotes student-centered curriculum development that aligns academic training with industry standards, thereby improving students' employability and readiness to teach the subject effectively in the future.

For Teacher Educators and Program Implementers: The findings will provide teacher educators with data-driven insights into the effectiveness of their current instruction. Understanding where students struggle or fall short will enable instructors to adapt their teaching strategies, provide targeted remediation, and enhance hands-on learning opportunities. Program implementers can also use the data to refine course structures and allocate resources more effectively.

For Curriculum Developers and School Administrators: This study will guide curriculum developers in designing a **contextualized curriculum enrichment** plan that responds to identified skill deficiencies. It will also support administrators in making evidence-based decisions

regarding faculty training, facilities upgrading, and partnership building with industry stakeholders. By doing so, institutions can ensure that their programs are responsive, adaptive, and aligned with national competency frameworks such as those set by TESDA.

For the Technical-Vocational Education Sector and Policymakers: At a broader level, this research contributes to the discourse on curriculum responsiveness in the Philippine technical-vocational education system. By presenting a model for assessing and addressing specialization-specific skills gaps, this study can inform policies that advocate for curriculum standardization, industry alignment, and enhanced quality assurance across BTLED programs nationwide.

For Future Researchers: The study also serves as a basis for future academic inquiries on subject-specific skills gap analysis. It lays the groundwork for more granular investigations into other BTLED specializations and technical courses, encouraging continuous improvement and innovation in vocational teacher education.

In sum, the study is significant in helping close the gap between education and employment by offering practical and policy-level solutions to improve Bread and Pastry Production instruction within BTLED programs.

REVIEW OF RELATED LITERATURE

This review explores scholarly findings relevant to identifying skills gaps among BTLED (Bachelor of Technology and Livelihood Education) students, particularly in the course Bread and Pastry Production. It also examines student profiles, perceived challenges, and proposed strategies for curriculum enrichment aligned with TESDA (Technical Education and Skills Development Authority) standards. The literature is organized based on the major areas of inquiry outlined in the statement of the problem.

Profile of BTLED Students and Specialized Competencies. Understanding the student profile is essential in contextualizing skill development. Tan, Awan, and Ruiz [5] found that BTLED students' readiness for industry engagement varied by year level. Lower-year students focus more on theoretical foundations, while senior students receive more practical and industry-related exposure, influencing their ability to identify and address skill gaps [5].

The BTLED curriculum is composed of three specializations: Industrial Arts, Home Economics, and Information and Communication Technology (ICT). Each area develops a specific skill set. Industrial Arts emphasizes construction, woodworking, and basic electrical skills [6]. Home Economics includes culinary arts, bread and pastry production, wellness, and home management [7]. ICT focuses on programming, hardware servicing, and digital tools [8]. While these programs offer a solid foundation, many students struggle with transitioning their classroom knowledge into real-world applications.

Perceived Skills Gaps in Bread and Pastry Production. Studies highlight the mismatch between instruction and industry expectations, especially in skill-based subjects.

Ang and Fernandez [7] reported that BTLED students often lack updated technical competencies, particularly in food production and ICT. In Home Economics, students pointed out weaknesses in precision baking, food costing, and business-oriented skills necessary for professional growth [9]. TESDA [10] identified persistent deficiencies in practical competencies such as digital literacy, communication, and problem-solving—skills essential for operating or managing a bakery or food-related business. These gaps directly affect student preparedness and employability. It was also found that students struggle with baking techniques, equipment handling, and adherence to standard industry procedures [1].

Challenges in Acquiring Bread and Pastry Skills. Skill development is hindered by resource limitations and instructional gaps. It is the lack of industry-standard kitchen tools, outdated learning materials, and limited exposure to workplace environments [1]. Torres and Rivera noted challenges such as insufficient practicum hours, inaccessible equipment, and low confidence due to limited industry exposure [1].

Student Recommendations for Program Enhancement. Students have proposed several enhancements. Santos [11] recommended integrating soft skills like communication, time management, and teamwork within technical instruction. Torres and Rivera [1] emphasized student calls for improved laboratories, modern tools, longer training, and industry-based learning experiences.

Curriculum Enrichment Strategies for BTLED Programs. Lazo [12] argued that curriculum development should be driven by skills gap analysis, particularly in technical-vocational fields. She advocated for diagnostic tools and industry-responsive content, especially in practical training courses. Integrating TESDA's National Certificate (NC) programs—such as Bread and Pastry Production NC II—can enhance graduate qualifications and employability [13]. Specialized Enrichment Approaches:

- **Industrial Arts:** Incorporate automation and sustainable construction [14].
- **Home Economics:** Embed entrepreneurship and food innovation [15].
- **ICT:** Update with AI, cybersecurity, and cloud computing [8, 18, 17] highlighted the value of industry partnerships and work-based learning in contextualizing theoretical knowledge and addressing practical deficiencies.

Curriculum Responsiveness and Industry Alignment: Dizon and Balajadia [4] emphasized the need for agile curricula that evolve with industry demands. They advocated for regular skills audits, stakeholder consultation, and competency updates to ensure relevance—particularly in courses like Bread and Pastry Production.

Continuous Professional Development for Instructors

No enrichment strategy is complete without faculty development. TESDA [18] stresses the importance of the Trainer's Methodology Certification for instructors. Educators trained in industry standards and modern methods are more capable of equipping students with current, in-demand skills.

THEORETICAL BACKGROUND

This study on skills gaps in Bread and Pastry Production among BTLED students is grounded in **Human Capital Theory (HCT)**, **Social Cognitive Career Theory (SCCT)**, and **Constructivist Learning Theory**, which together address economic, psychological, and educational aspects of skill development and curriculum enrichment.

Human Capital Theory (Becker, 1964) views education as an investment that boosts productivity and employability. The observed deficiencies in baking, entrepreneurship, and equipment use among students indicate underinvestment in human capital [19]. Addressing these through TESDA-aligned training, hands-on modules, and updated instruction enhances economic returns from education [20], especially in entrepreneurial fields like baking [2].

Social Cognitive Career Theory (Lent, Brown, & Hackett, 1994) highlights the role of self-efficacy, outcome expectations, and environment in career development [21]. Many students struggle not only with skills but also with confidence and exposure, as shown in Research Question 2. This theory supports strategies like mentorship and real-world experience to improve student motivation and readiness [1], aligning with Research Questions 4 and 5 on curriculum improvement.

Constructivist Learning Theory : Others emphasized learning through active, social experiences. Gaps in lab access and industry immersion point to a lack of experiential learning [1, 22 and 23] support integrating project-based tasks, simulations, and mentor-led instruction—especially through TESDA-certified teachers and workplace learning [24]—addressing challenges noted in Research Question 3.

THEORETICAL FRAMEWORK

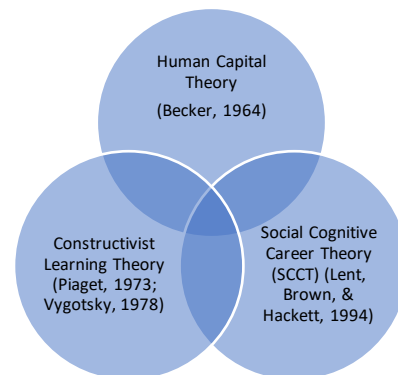


Figure 1: The Theoretical Framework of the study

Together, these theories justify the proposed curriculum enhancements by promoting practical, relevant, and student-centered learning. HCT emphasizes the economic value of skill development [19], SCCT underscores student mind-set and career direction [21], and Constructivism [22, 23] highlights the importance of real-world learning environments. Their combined use ensures that the study's recommendations are both pedagogically grounded and aligned with labor market needs.

This study, *Identifying the Critical Skills Gaps in Bread and Pastry Production Competencies: Implications for Curriculum Enrichment*, is guided by three interrelated theories: **Human Capital Theory (HCT)**, **Social Cognitive Career Theory (SCCT)**, and **Constructivist Learning Theory**. These frameworks support a well-rounded understanding of the skills gaps faced by BTLED students and inform strategies for responsive curriculum enrichment.

Human Capital Theory [19] provides the economic rationale, asserting that education and training increase productivity and employability. The skills gaps found in Bread and Pastry Production reflect a misalignment between educational outcomes and labor market needs. This theory underscores the importance of updating the curriculum to maximize returns on educational investment by aligning it with industry standards.

Social Cognitive Career Theory [21] adds a psychological perspective, explaining how self-efficacy, goals, and expectations shape students' career decisions and perceptions of readiness. For BTLED students, low confidence or unclear career direction can contribute to perceived skill deficiencies. SCCT justifies enrichment strategies such as mentorship, industry immersion, and coaching to build confidence and motivation.

Constructivist Learning Theory [22, 23] emphasizes learning through active, hands-on experiences. In a practical field like Bread and Pastry Production, a lack of real-world exposure can limit skill mastery. This theory supports curriculum approaches that include experiential, project-based, and collaborative methods to close the gap between theory and practice.

Together, **HCT**, **SCCT**, and **Constructivism** provide a comprehensive lens: economic alignment with labor demands, psychological readiness for career pathways, and pedagogical soundness through experiential learning. This integrated approach ensures that the study's recommendations are relevant, student-centered, and aligned with both educational and industry expectations.

RESEARCH METHODOLOGY

This study, *Identifying the Critical Skills Gaps in Bread and Pastry Production Competencies: Implications for Curriculum Enrichment*, adopts a mixed-methods research design to comprehensively explore the competencies of Bachelor of Technology and Livelihood Education (BTLED) students at Negros Oriental State University (NORSU) Main Campus I. The design integrates both quantitative and qualitative data collection and analysis to allow for triangulation, enhancing the validity and depth of the findings. A descriptive-exploratory approach is used: the descriptive component profiles students by year level and specialization and assesses their perceived competencies, while the exploratory component investigates challenges in skill acquisition and potential curriculum enhancements. This approach is grounded in Human Capital Theory (Becker, 1993), which views education as an economic investment to increase

employability, and Constructivist Learning Theory (Piaget, 1973; Vygotsky, 1978), which emphasizes the role of experiential and contextual learning in developing practical competencies.

The entire population of BTLED students at NORSU Main Campus I will be included through total population sampling, ensuring comprehensive representation across the three specializations: Industrial Arts, Home Economics, and ICT. Quantitative data will be collected using a structured questionnaire based on the TESDA Self-Assessment Guide (SAG) for Bread and Pastry Production NC II. This instrument covers demographic details and student perceptions of their abilities to perform key TESDA competencies, with results analyzed using frequency and percentage counts. To enrich these findings, qualitative data will be gathered through semi-structured interviews with ten purposively selected students and focus group discussions (FGDs) per specialization. These discussions will explore students' experiences, perceived skills gaps, and suggestions for improving Bread and Pastry instruction. A curriculum review will also be conducted to assess the alignment of current BTLED offerings with TESDA standards, including content relevance, presence of practicum experiences, and availability of laboratory facilities.

Qualitative data will be analyzed using Braun and Clarke's (2006) thematic analysis framework, which includes transcription, coding, theme identification, and categorization into domains such as technical skill gaps, soft skill deficiencies, and proposed enhancements. This process is informed by Social Cognitive Career Theory (Lent, Brown, & Hackett, 1994), which helps explain how student confidence, outcome expectations, and environmental support influence skills development and career preparedness. Ethical standards will be strictly followed, with informed consent obtained from all participants. Data confidentiality will be maintained through pseudonymization, and participants will be informed of their right to withdraw at any time without penalty. The expected outcomes of the study include: a comprehensive demographic and academic profile of BTLED students; a detailed identification of both technical and soft skill gaps in Bread and Pastry Production; rich qualitative insights into the challenges students face in acquiring these competencies; evidence-based recommendations for curriculum enrichment including TESDA-aligned modules and certifications; and contributions to the broader discourse on aligning BTLED education with labor market demands, supporting Human Capital Theory and experiential learning principles. However, the study also acknowledges several limitations: findings may not be generalizable beyond NORSU Main Campus I due to its institutional and regional context; self-assessment data may be affected by social desirability bias; and time constraints may limit the depth of qualitative exploration.

RESULTS AND DISCUSSIONS

QUESTION NO. 1. On the profile of the respondents:

The study's respondents were primarily upper-year BTLED students, with 54.17% in their fourth year and 45.83% in their third year. This distribution suggests that most participants have had substantial academic and practical exposure, making their insights into skills gaps both relevant and reliable. In terms of specialization, a dominant 87.50% of respondents were enrolled in BTLED–Home Economics, while only 8.33% and 4.17% specialized in Industrial Arts and ICT, respectively. This indicates that the findings are heavily focused on the Home Economics track, especially Bread and Pastry Production. While this strengthens the depth of the analysis in this area, it also suggests a need for future studies to include more balanced representation from other BTLED specializations.

QUESTION NO. 2: What are the specific skills gaps perceived by BTLED students in Bread and Pastry Production competencies?

The assessment of BTLED–Home Economics students' competencies in **Performing Bread and Pastry Production** revealed a high overall self-reported proficiency, with an average of 94.32% indicating competence across key learning outcomes (see Table 2.1). Students demonstrated full mastery (100%) in foundational and presentation-related tasks, such as selecting ingredients, using tools, decorating products, plating, packaging, and applying hygiene standards. However, noticeable **gaps emerged in more technical areas, particularly in baking products according to standards (79.17%), selecting oven temperatures (83.33%), and demonstrating knowledge of product varieties (87.50%).** These deficiencies indicate a need for targeted reinforcement in production control, thermal application, and theoretical foundations that underpin practice. Consistent with Torres and Rivera [1], the study finds that integrating industry simulations and practical assessments can address these gaps effectively. Manalo and Santos [2] also emphasize the importance of embedding TESDA-aligned outcomes in teacher education to enhance qualification readiness. Therefore, the study concludes that while BTLED students are operationally competent, enhancements in technical precision and theoretical knowledge are necessary for full alignment with TESDA standards and industry expectations. It is recommended that the curriculum incorporate scenario-based training, employ TESDA-certified assessors for regular evaluations, and strengthen academic-industry linkages, as supported by Dizon and Balajadia [4], to ensure BTLED graduates are both certification-ready and industry-competitive.

The assessment of BTLED students' readiness for TESDA's **Certificate of Competency (COC) 1 in Bread Making** reveals a high overall level of self-perceived proficiency, with an average affirmation rate of 96.59%. Students reported full competence (100%) in foundational tasks such as ingredient preparation, equipment use, product decoration, plating, packaging, and food safety application—highlighting strong operational and aesthetic

skills. However, moderate gaps were noted in technical competencies, particularly in selecting oven temperature (91.67%), executing proper baking techniques (91.67%), and demonstrating theoretical knowledge of product characteristics (91.67%). These areas are critical for success in TESDA's competency-based assessments [1, 2]. The results emphasize the need for TESDA-aligned curriculum enhancements, particularly in procedural precision and product knowledge. As Lazo [12] asserts, technical-vocational education must go beyond basic training to include context-rich, performance-based learning aligned with industry standards. Thus, while students show a strong foundational grasp, the study concludes that deeper training in baking science, thermal control, and product evaluation is essential. It is recommended that institutions implement intensive laboratory sessions, conduct formative assessments with TESDA-certified evaluators, and establish industry partnerships to provide authentic hands-on experiences, as advocated by Dizon and Balajadia [4], to ensure all students achieve full readiness for national certification and employment in the food industry.

For **TESDA's Certificate of Competency (COC) 2 in Pastry Making**, showing an overall strong competency level with an average "YES" rate of 93.94%. Students reported complete confidence (100%) in foundational areas such as measuring ingredients, using equipment, decorating, plating, packaging, and applying hygiene practices, indicating mastery of basic operational tasks. However, technical competencies such as selecting oven temperatures (87.50%), baking under correct conditions (87.50%), preparing a variety of desserts (79.17%), and demonstrating theoretical knowledge of pastry products (83.33%) reflect notable skill gaps. These deficits mirror previous concerns in related research regarding the insufficiency of conceptual depth and technical finesse in vocational training [1, 2]. Consequently, while most students appear well-prepared for certification, the study concludes that targeted curriculum interventions are needed to support those with weaker technical mastery. It is recommended that Pastry Making instruction be enhanced through thermal calibration workshops, integration of culinary science principles, and scenario-based performance tasks. In alignment with Dizon and Balajadia [4], and supported by Lazo's [12] advocacy for experiential learning, institutions should strengthen ties with certified pastry chefs and professional kitchens to offer students hands-on, industry-aligned experiences that elevate technical competency and certification readiness across the entire cohort.

BTLED–Home Economics students' self-assessed competencies for **TESDA's Certificate of Competency 3 in Cake Making**, revealing an average "YES" response rate of 87.50%—the lowest among the three COCs evaluated—indicating more substantial skill deficiencies in this domain. While students expressed high confidence in foundational competencies such as ingredient selection (95.83%), equipment usage (95.83%), oven temperature control (95.83%), and food hygiene (100%), markedly lower proficiency was reported in complex, high-skill areas: only

70.83% felt confident preparing sponges and cakes, 66.67% in assembling cakes and fillings, and 79.17% in demonstrating knowledge of specialized cakes. These findings suggest a critical need for enhanced training in the technical and artistic processes of cake structuring, layering, and advanced decoration—core skills required for TESDA certification and industry readiness [2, 1]. The study concludes that while general baking capabilities are well-developed, Cake Making remains a weak point in the BTLED curriculum. As such, it is recommended that institutions implement specialized modules focused on cake assembly and creative presentation, supported by mentorship from certified cake professionals and enriched with scenario-based evaluations. Moreover, establishing modern cake production laboratories equipped with professional-grade tools would reinforce experiential learning. As emphasized by Dizon and Balajadia [4] and Lazo [12], aligning curriculum enhancements with TESDA standards and real-world baking practices is essential to ensure that students not only meet certification requirements but are also competitively skilled for employment in commercial and specialty baking sectors. The assessment of BTLED–Home Economics students' self-reported competencies for TESDA's Certificate of Competency 4 in Petits Fours Making reveals an average competency rate of 88.33%, indicating moderate proficiency but with notable skill gaps in critical technical areas (see Table 2.5). While students expressed strong confidence in basic operations such as ingredient selection (95.83%), equipment use (95.83%), and food hygiene (100%), only 66.67% felt capable of preparing marzipan, caramelized items, and various types of petits fours, and just 70.83% felt confident in selecting oven temperatures. Furthermore, only 79.17% reported sufficient knowledge of petits fours product characteristics. These deficiencies highlight a disconnect between foundational knowledge and the advanced techniques required for TESDA certification and professional competency [1, 2]. The findings suggest the need for more targeted training in specialized skills such as intricate pastry assembly, temperature-sensitive baking, and aesthetic finishing. It is concluded that although students have achieved competence in general baking tasks, they are underprepared for the complex, detail-oriented demands of petits fours production. In response, the curriculum should be enriched with hands-on workshops, guided by TESDA-certified professionals, focusing on precision baking, ingredient manipulation, and finishing artistry. Additionally, scenario-based practical evaluations and recipe standardization drills are recommended to build technical accuracy and product consistency [12]. As Dizon and Balajadia [4] emphasize, aligning these interventions with TESDA NC II standards and industry practices is essential to elevate students' mastery and ensure they are well-equipped for certification and future employment in high-skill pastry environments.

QUESTION NO. 3. What challenges and difficulties have you encountered in acquiring the necessary skills and competencies in this subject?

Emergent Framework

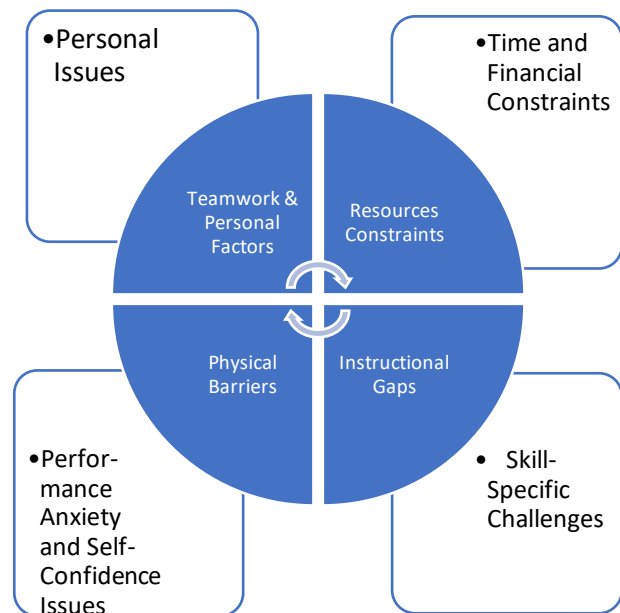


Figure No. 2 Emergent Framework on Challenges

The emergent framework identifies four key areas affecting students' ability to acquire skills in Bread and Pastry Production: **Teamwork and Personal Factors**, **Resource Constraints**, **Instructional Gaps**, and **Physical Barriers**. Students such as P5, P6, P18, and P20 reported low self-confidence, anxiety during tasks, and group-related issues that hinder full participation in collaborative settings—concerns that echo Luna and Castillo's [26] findings on emotional vulnerability in vocational education and Torres and Valencia's [27] study on how poor group dynamics and low self-esteem reduce engagement. **Resource Constraints** were frequently cited by P1, P3, P7, P10, P19, P21, and P24, who noted the lack of tools, budget, ingredients, and time—reinforcing De Vera and Ramos's [28] assertion that limited resources disrupt technical learning, and Garcia and Mendoza's [29] conclusion that insufficient materials impair skill mastery.

Instructional Gaps, identified by P4, P11, P15, P17, P20, and P22, included limited practice time, lack of updated resources, and difficulty understanding complex procedures. These align with Salvador and Aquino's [30] observation that overloaded curricula and ineffective scaffolding result in fragmented learning, and Morales and Ysip's [32] findings on the role of outdated instruction and weak feedback in hindering performance. Lastly, **Physical Barriers**, cited by P13 and P14, such as fatigue from kneading and prolonged standing, reflect the physical strain discussed by Del Rosario and Villanueva [32], who advocate for ergonomic considerations, and Lopez and Enriquez [33], who emphasized the negative effects of physical discomfort on concentration and safety. These

interconnected challenges highlight the urgent need for enhanced instructional strategies, better access to resources, and learner-centered approaches to effectively implement the Bread and Pastry Production curriculum.

QUESTION NO. 4. What suggestions would you offer to enhance the implementation of the course curriculum?

Emergent Framework

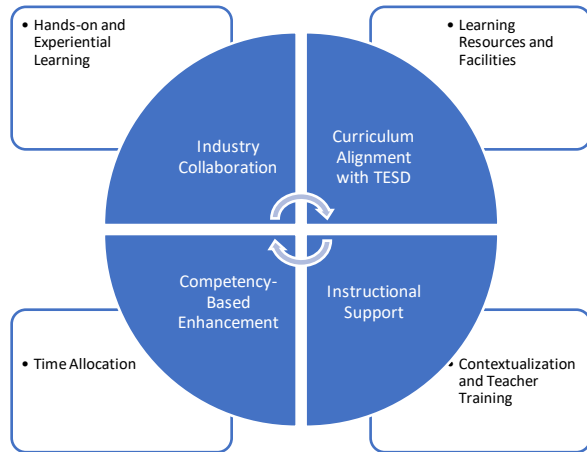


Figure No. 3: Emergent Framework on Suggestions

The emergent framework for improving the Bread and Pastry Production course curriculum is organized into four key thematic areas based on student input and supported by relevant literature. First, **Industry Collaboration** highlights the need for more hands-on, real-world learning through partnerships with professionals. Participants (P2, P6, P19, P20, P22, P23) emphasized the importance of experiential learning and simulations, echoing Reyes and Mallari [34], who argued that industry exposure enhances skill relevance, and Villanueva and Santos (2022), who found that real-life simulations boost performance and motivation. Second, **Curriculum Alignment with TESDA** stresses the importance of synchronizing course content with national standards and ensuring the availability of appropriate resources and facilities. Participants (P1, P3, P5, P13, P14, P21) supported this, aligning with findings by Caballero *et al.* [36] and Francisco and Delos Reyes [36] who noted that alignment with TESDA enhances program credibility and student readiness for certification. Third, **Competency-Based Enhancement** calls for better time allocation to allow deeper skill development. As participants (P7, P11) noted, more time for practical work is essential for achieving mastery—a concern echoed by Martinez and Cruz [37] and Ramos [38], who emphasized that intensive practice is necessary for technical proficiency. Lastly, **Instructional Support** focuses on contextualized teaching and continuous instructor development. Participants (P4, P10, P15) emphasized the inclusion of demonstrations, use of local ingredients, and teacher training. This aligns with De Guzman and Ortega [39], who highlighted the benefits of localized instruction, and Salazar and Manuel [40], who stressed the need for ongoing professional development.

Together, these themes advocate for a more practical, standards-based, and learner-centered curriculum that meets both educational and industry expectations.

QUESTION NO. 5. What curriculum enrichment can be proposed in BTLED under Home Economics program to address these identified gaps?

Proposed Curriculum Enrichment for BTLED – Home Economics Program

1. Integration of TESDA-Aligned Specialized Modules

- Incorporate COC-specific modules (e.g., Bread Making, Pastry Making, Cake Making, Petits Fours Making) that are directly aligned with TESDA's Training Regulations.
- Embed assessment-ready activities in each module to prepare students for National Certificate (NC) evaluations.

2. Development of a Competency-Based Laboratory Training Program

- Establish a skills-based practicum course that focuses on the most deficient areas: sponge and cake preparation, petits fours techniques, dessert plating, and temperature control.
- Provide dedicated lab sessions that allow for focused repetition and mastery of complex baking procedures.

3. Implementation of Industry-Based Learning Approaches

- Integrate simulation-based learning (e.g., bakery business role-play, timed baking challenges) that mimics real-world culinary settings.
- Offer capstone or culminating projects requiring students to conceptualize and produce a full bakery product line or menu using TESDA standards.

4. Enhanced Time Allocation for Practical Activities

- Revise course scheduling to include longer laboratory periods or block scheduling for technical courses, ensuring ample time for preparation, baking, and critique.
- Introduce a progressive skills ladder, where students advance through increasingly complex tasks across semesters.

5. Contextualization of Curriculum Content

- Enrich the curriculum with localized recipes, indigenous ingredients, and traditional baking practices to promote cultural relevance and student creativity.
- Include topics that address community-based entrepreneurship, empowering students to start micro-baking enterprises post-graduation.

6. Strengthening of Teacher Training and Instructional Capacity

- Provide instructors with upskilling programs, including TESDA COC certifications, workshops in advanced pastry arts, and training in competency-based education.
- Equip teachers with updated instructional materials, including recipe books, video tutorials, and digital simulations for theory and practice integration.

7. Integration of Soft Skills and Personal Development

- Include modules on teamwork, stress management, communication skills, and entrepreneurial mindset to address the personal and psychosocial barriers identified (e.g., low confidence, group conflict).
- Use formative assessments and reflective activities to monitor personal growth alongside technical proficiency.

8. Development of a School-Based Enterprise Model

- Launch a student-operated bakery within the school that allows students to apply their skills in a controlled, revenue-generating environment.
- Align production tasks with TESDA competencies and rotate student responsibilities to simulate workplace roles.

CONCLUSIONS

The study assessed the competencies of BTLED–Home Economics students in Bread and Pastry Production, revealing high overall proficiency in foundational skills but notable gaps in complex technical areas such as cake and petits fours preparation. TESDA-aligned assessments showed declining competency in more advanced Certificate of Competency (COC) areas, particularly in sponge cake preparation and temperature-sensitive techniques. In addition to technical gaps, students faced challenges related to personal confidence, limited resources, outdated instructional strategies, and physical strain during extended practice sessions.

To address these issues, the study proposes enriching the curriculum through TESDA-aligned modules, simulation-based training, industry partnerships, and hands-on instruction by certified professionals. It emphasizes the need for updated facilities, better instructional delivery, and a student-centered approach that considers psychological and physical readiness. The proposed framework focuses on four main areas: industry collaboration, alignment with TESDA standards, competency-based enhancement, and improved instructional support—ultimately aiming to make the Bread and Pastry Production curriculum more inclusive, effective, and aligned with industry demands.

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