

Senior high school students' performance in Bread and Pastry Production (BPP) NCII: basis for designing an intervention Materials

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International Journal of Science and Research Archive, 2026, 19(02), 210-223

Publication history: Received on 28 March 2026; revised on 03 May 2026; accepted on 06 May 2026

Article DOI: <https://doi.org/10.30574/ijrsra.2026.19.2.1004>

Abstract

This study determined the level of influence on students' performance of Senior High School (SHS) students in Bread and Pastry Production NCII in the municipality of Sto. Domingo, Albay as basis for designing intervention materials. It examined the socio-demographic profile of the students in terms of gender, family monthly income, educational attainment of parents, students' interest, and access to resources. It also assessed the level influencing students' performance along facilities and resources, performance tasks, work immersion, students' interest, learning modality, and skill preferences. The study further tested the significant relationship between the socio-demographic profile and the perceived level of influence on students' performance.

The study employed a descriptive-quantitative research design using a survey questionnaire administered to 48 Grade 12 students enrolled in Bread and Pastry Production NCII during the school year 2025–2026. Data were analyzed using frequency count, percentage, ranking, weighted mean, and Chi-square test. Findings revealed that most respondents were female, belonged to low-income families, and had parents with basic to secondary education. Work immersion, students' interest, and skill preferences were identified as the most influential factors affecting performance.

Based on the results, digital intervention materials focusing on personal protective equipment, creative performance tasks, work immersion, and career motivation were developed to address identified gaps. The study concludes that learner-centered and experiential factors greatly influence students' performance and should be prioritized in instructional planning. Recommendations include strengthening work immersion programs, enhancing student engagement, and utilizing the developed intervention materials to improve competencies in Bread and Pastry Production NCII.

Keywords: Students Performance; Bread and Pastry Production NCII; Intervention Materials; Descriptive-quantitative research; Work Immersion

1. Introduction

Bread and Pastry Production NCII is one of the strands under the TVL track that focuses on developing students' competencies in preparing bakery products, pastries, cakes, and desserts. This program requires mastery of ingredients, baking techniques, and precise execution of procedures. Students are encouraged to apply creativity and passion in producing quality baked goods, treating the craft as both a technical skill and an art. Through laboratory activities and hands-on training guided by Technical-Vocational Livelihood teachers, learners gain practical experience that enhances their confidence, creativity, and productivity.

Despite the importance of this training, Senior High School students enrolled in Bread and Pastry Production NCII in the municipality of Sto. Domingo, Albay face several challenges. These include insufficient baking tools and equipment,

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limited funding for ingredients, lack of opportunities for recipe innovation, and large class sizes. Overcrowded classrooms also limit teachers' ability to provide individualized instruction and close supervision during practical activities. In addition, both teachers and students experience shortages of learning materials and resources, which affect the quality of instruction and skill development. These conditions may lead to low motivation among students and difficulties in mastering required competencies.

There is a felt need to conduct this study due to the persistent challenges experienced in the implementation of Bread and Pastry Production NCII, particularly in terms of inadequate facilities, limited instructional materials, and insufficient hands-on training opportunities. These issues may hinder the development of essential competencies required in the baking industry. Conducting this study is necessary to generate empirical evidence that will serve as a basis for designing appropriate intervention plans and instructional materials. Ultimately, the findings are expected to improve teaching and learning processes, strengthen students' practicum performance, and align training with industry standards. Hence, the researcher conducted this study entitled, "Senior High School Students' Performance in Bread and Pastry Production (BPP) NCII: Basis for Designing an Intervention Plan/Materials," in selected senior high schools in the municipality of Sto. Domingo, Albay.

1.1. Statement of the Problem

The study determined the level of influence on students' performance of senior high school (SHS) students in Bread and Pastry Production NCII in the municipality of Sto. Domingo, Albay as basis in designing intervention materials. Specifically, it also answered the following questions:

- What is the socio-demographic profile of the students in terms of:
 - Sex
 - Monthly income of the family
 - Educational attainment of parents
 - Parental involvement
 - Students' interest
 - Access resources
- What are the factors that influence to students' performance of Bread and Pastry Production NCII as perceived by themselves along:
 - Facilities and resources
 - Performance tasks
 - Work immersions
 - Students' interest
 - Learning modality
 - Skill preferences
- Is there any significant relationship between the socio – demographic profile and the perceived level of influence to students' performance in bread and pastry production among the variables?
- What intervention materials can be developed to enhance the performance of Bread and Pastry Production students based on the findings of the study?

1.2. Scope and Delimitation

The study focused on determining the level of influence on students' performance in Bread and Pastry Production NCII as perceived by Senior High School students in the municipality of Sto. Domingo, Albay. The findings served as basis for the development of a learning intervention plan and instructional materials aimed at enhancing students' performance in the said specialization.

Specifically, the scope of the study included the socio-demographic profile of the students in terms of gender, monthly family income, educational attainment of parents, parental involvement, students' interest, and access to learning resources. It also covered the assessment of the level of influence on students' performance as perceived by the respondents themselves along facilities and resources, performance tasks, work immersion, learning modality, students' interest, and skill preferences. Furthermore, the study examined the significant relationship between the socio-demographic profile and the level of influence on students' performance in Bread and Pastry Production NCII. The development of digital learning intervention materials based on the findings of the study was also included.

In terms of delimitation, the study was limited to forty-eight (48) Grade 12 Senior High School students enrolled in Bread and Pastry Production NCII under the career track in the municipality of Sto. Domingo, Albay during the school

year 2025–2026. Only these selected student-respondents were included in the study, while teachers, school heads, and other subject teachers were excluded.

2. Materials and Methods

2.1. Research Design

The study utilized the descriptive-quantitative research design to determine and describe the level of influence of selected factors on the performance of Bread and Pastry Production NCII students. This design is appropriate because it focuses on gathering numerical data that describe existing conditions without manipulating variables. McCombs (2019) explains that descriptive-quantitative research uses statistical data to describe a population or phenomenon, while Creswell and Creswell (2018) emphasize that it ensures objectivity and reliability through statistical analysis. In relation to the present study, this design was applied in collecting and analyzing data on the socio-demographic profile of the respondents and their perceived level of influence on performance in terms of facilities and resources, performance tasks, work immersion, learning modality, student interest, and skill preferences. The use of this design allowed the researcher to quantify responses and determine patterns that explain the performance of students in Bread and Pastry Production NCII, which served as the basis for developing an intervention materials.

In addition to the quantitative approach, the study also employed an unstructured informal interview to supplement the data gathered from the survey questionnaire. This method was used to obtain deeper insights into the experiences and challenges of the respondents that may not be fully captured through structured instruments. The informal interview provided additional qualitative information that helped clarify issues related to students' performance, learning conditions, and instructional practices. These responses supported the interpretation of quantitative results and contributed to a more comprehensive understanding of the research problem.

2.2. Respondents of the Study

The respondents of the study were the 48 Senior High School Students specifically Grade 12 taking the career track, Bread and Pastry Production NCII as the respondents and source of data and information to answer all the problems of the study. Teachers, School heads and other subject teachers are not included as respondents of the study.

2.3. Data Gathering Tools

One of the main tools used in the data gathering was a researcher-made questionnaire. The questionnaires were validated by 15 senior high school students who are not included as respondents of the present study to gain some suggestions as to the questionnaire's strength or weaknesses.

It was distributed through personal distribution among the respondents for the instructions. It was personally distributed and were retrieved from the Office of the Department Head as to the distribution and retrievals were done thru personal or letters or cellphones as medium of communication.

2.4. Preparation of Questionnaire

Part I of the questionnaire was about determining the socio-demographic profile of the students' as to gender, monthly income of the family, educational attainment, parental involvement, students' interest and access resources. **Part II** was about determining the level of influence the performance of the SHS students as perceived by themselves along facilities and resources, performance tasks, work immersions, students' interest, learning modality, and skill preferences.

The questionnaire was constructed in accordance with the following criteria as defined by Fao.org: clear research objectives, obtains the most complete and accurate information as possible, and easy for respondents to give the necessary information and for the researcher to tabulate the answer.

The draft of the questionnaire was submitted to the researcher's Adviser for critiquing. Suggestions given during its dry run was solicited for its improvement and were reflected. After its approval, a final copy was made for final distribution in the selected senior high schools in the municipality of Sto. Domingo, Albay as the setting of the study.

- **Validation of the Questionnaire.** The instrument was subjected to a dry run to further improve its content, determined whether it possess the qualities of clarity, specificity of content, time requirement, singleness of purpose, freedom from assumption and grammaticality.

- **Administration and Retrieval.** A permit to distribute the questionnaire was asked from the Dean of Graduate Studies of USANT, Iriga City, to the Schools Division Superintendent of the Schools Division Office of Albay and Department Heads of Senior High School.

The researcher personally distributed and retrieved the questionnaires. The gathered data were tabulated, organized, analyzed and were interpreted quantitatively. It was translated in simple-word English for better understanding for students. The researcher used statistical tools to treat the data that were gathered. The responses of the respondents were classified and were tabulated systematically according to the 6 variables included in the study.

3. Results and Discussion

3.1. Socio Demographic Profile of the Students

This study introduces the socio-demographic profile of Senior High School (SHS) students in relation to their performance in Bread and Pastry Production (BPP) NC II. It considers key variables such as gender, monthly family income, educational attainment of parents, parental involvement, students' interest, and access to resources to provide a clearer understanding of the learners' backgrounds and learning conditions. These factors help explain variations in students' engagement and performance in BPP, thereby serving as a foundation for designing appropriate intervention plans and instructional materials.

3.1.1. Gender

Gender always plays a crucial role in choosing a track or course Bread and Pastry Production (BPP(NCII) among high school students and it was found out among studies that the roles of motivation, gender norms, and program alignment in shaping student's academic performance and suggested institutional measures to promote gender balance and support motivation across academic programs.

Table 1 Socio Demographic Profile of the Students in terms of Gender

Indicators	F	P
Male	17	35.42
Female	31	64.58
Total	48	100

Table reveals that female respondents have the highest percentage, while male respondents have the lowest. This suggests that more female students are enrolled or involved in Bread and Pastry Production NCII. This result is supported by the study of Celestino (2024)¹, which found that senior high school learners in bread and pastry production are actively engaged in the course despite challenges, reflecting strong interest and participation in the field. Similarly, Agbunag (2024)² reported high awareness and competency levels among students in the use of baking tools and equipment, indicating active involvement in baking-related activities. In the same manner, Vicera et al. (2021)³ emphasized that students' participation in vocational tasks is influenced by their background and access to resources, which can shape their engagement in skill-based courses. These findings support the present result that a greater number of students, particularly females, are drawn to bread and pastry production due to interest and exposure to the course.

3.1.2. Monthly Income of the Family

A shortage of resources in the kitchen laboratory for bread and pastry students is extremely stressful for students as well as teachers. Not all ingredients, tools and other materials are able to be provided perfectly by most of schools hence, not only are students and instructors in distress, but they are also unable to study to their full capacity due to a lack of resources.

Table 2 Socio Demographic Profile of the Students in terms of Monthly Income of the Family

Indicators	F	P
10,000 & Below	25	52.08
10,001-20,000	15	31.25
20,001-30,000	4	8.33
30,001-40,000	4	8.33
40,001-50,000	0	0
50,001 & Above	0	0
Total	48	100

Table 2 presents that the highest percentage is observed in the 10,000 and below income group, while the lowest is in the 40,001–50,000 bracket with no respondents. This indicates that a large portion of the students come from low-income families. This result is supported by the study of Vicera et al. (2021), which found that many students in vocational education come from low-income backgrounds and often struggle to provide materials needed for hands-on activities. In the same way, Naelga and Blane (2020)⁴ reported that financial limitations affect both students and teachers, leading to insufficient learning resources and reliance on personal funds. Torres (2021) also noted that limited financial capacity contributes to shortages in equipment and materials, affecting the quality of practical training. These studies confirm that family income plays a significant role in students' access to resources and participation in bread and pastry production activities

3.1.3. Educational Attainment of Parents

It cannot be denied that the influence exerted by the parents' education upon the academic achievements of students was evident since academic success among children is a complex culmination of various factors, with the parents' education emerging as a notably influential determinant. Table 3. The Practices of the Students along Water Conservation

Table 3 Socio Demographic Profile of the Students in terms of Educational Attainment of Parents

Indicators	F	P
Illiterate	1	2.08
Elementary Level – Incomplete	4	8.33
Elementary Level – Completed	7	14.58
High School Level – Incomplete	13	27.08
High School Level – Completed	14	29.17
College Level – Undergraduate	1	2.08
College Level – Graduate	5	10.42
Postgraduate / Master's / Doctorate	3	6.25
Total	48	100

Table 3 indicates that the highest percentage is observed among high school level completers, while the lowest is shared by illiterate parents and college level undergraduates. This suggests that most parents have reached only basic to secondary education, with fewer attaining higher education. This result is supported by Tan (2021)⁵, which emphasized that educational background of parents can influence learners' academic support and exposure to technical-vocational skills. In the same manner, Vicera et al. (2021) noted that students coming from families with limited educational attainment may experience reduced academic guidance and fewer learning resources at home.

3.1.4. Parental Involvement

Parental involvement in their children's school endeavors was considered significantly and positively related to how parents are supporting their children in schools' activities and events to encourage achievements. Table 4 presents the indicators on parental involvement.

Table 4 Socio Demographic Profile of the Students in terms of Parental Involvement

Indicators	F	P
1.Attends school events and programs	10	20.83
2.Supports your learning and academic activities	18	37.50
3.Attends school events and programs, Supports your learning and academic activities	4	8.33
4.Participates in school activities or parent-teacher initiatives	2	4.17
5.Attends school events and programs, supports your learning and academic activities, Participates in school activities or parent-teacher initiatives	2	4.17
6.Provides guidance and supervision at home	4	8.33
7.Attends school events and programs, Provides guidance and supervision at home	1	2.08
8.Attends school events and programs, supports your learning and academic activities, Communicates regularly with teachers about your progress	1	2.08
9.Attends school events and programs, supports your learning and academic activities, provides guidance and supervision at home, communicates regularly with teachers about your progress, Participates in school activities or parent-teacher initiatives	6	12.50
Total	48	100

Table 4 shows that the highest percentage is observed among parents who support their children's learning and academic activities, while the lowest is recorded among combinations involving full parental involvement and limited single-activity participation. This indicates that most parents are actively engaged in supporting academic needs, although comprehensive involvement across all areas remains limited. This result is supported by Johnson and Johnson (2021)⁶, which emphasized that cooperative support systems, including parental involvement, contribute to improved student performance and engagement. In the same way, Ngade (2021)⁷ noted that teacher and home support systems strengthen learners' motivation and skill development in technical education.

3.1.5. Students' Interests

Maintaining student interest in bread and pastry production requires a balanced approach of consistent, hands-on practical experience, modern techniques, and creative, real-world projects. It includes also strategies include fostering an organized baking laboratory environment for confidence, utilizing gamified learning, and allowing student choice in creative decorating, which significantly increases engagement in bread and pastry production.

Table 5 Socio Demographic Profile of the Students in terms of Students' Interests

Indicators	F	P
Participates in hands-on demonstrations and practical baking activities	15	31.25
Expresses passion for baking through culinary projects and storytelling	1	2.08
Shares skills, experiences, and current trends with classmates	11	22.92
Designs and customizes cakes or pastry creations for challenges	3	6.25
Joins local or national baking competitions	2	4.17
Experiments with and samples different breads and pastries	1	2.08

Participates in hands-on demonstrations and practical baking activities; expresses passion for baking through culinary projects and storytelling	3	6.25
Participates in hands-on demonstrations and practical baking activities; shares skills, experiences, and current trends with classmates	5	10.42
Participates in hands-on demonstrations and practical baking activities; designs and customizes cakes or pastry creations for challenges	2	4.17
Participates in hands-on demonstrations and practical baking activities; designs and customizes cakes or pastry creations for challenges; expresses passion for baking through culinary projects and storytelling	1	2.08
Participates in hands-on demonstrations and practical baking activities; shares skills, experiences, and current trends with classmates; expresses passion for baking through culinary projects and storytelling	2	4.17
Participates in hands-on demonstrations and practical baking activities; shares skills, experiences, and current trends with classmates; designs and customizes cakes or pastry creations for challenges; experiments with and samples different breads and pastries; expresses passion for baking through culinary projects and storytelling	2	4.17
Total	48	100

Table 5 implies that the highest percentage is observed among students who participate in hands-on demonstrations and practical baking activities, while the lowest is recorded among those who solely express passion through storytelling and those who experiment with breads and pastries. This suggests that students demonstrate stronger inclination toward practical and experiential learning compared to purely expressive or exploratory activities. This result is reinforced by Mukarromah et al. (2021)⁸, which emphasized that hands-on training significantly improves engagement and skill acquisition in technical education. Likewise, Delfino (2021)⁹ found that experiential learning activities enhance student performance and motivation in vocational subjects.

3.1.6. Access to Resources

Accessing resources in bread and pastry production involves utilizing specialized kitchen equipment (mixers, ovens, scales), raw materials (flour, yeast, fats), and learning materials (modules, videos, recipes). These are acquired through technical training centers, digital, and print resources, often aligned with TESDA NC II training regulation. Table 6 present the indicators on access to resources in bread and pastry production.

Table 6 Socio Demographic Profile of the Students in terms of Access to Resources

Indicators	F	P
School facilities, including kitchen and baking equipment	21	43.75
School budget or allocated funds for ingredients, tools, and equipment	4	8.33
Online platforms, such as learning modules, tutorials, and recipes	15	10.42
Textbooks and manuals provided by the school or DepEd	4	8.33
Industry partnerships, including suppliers, bakeries, and guest speakers	1	2.08
School facilities, including kitchen and baking equipment, Online platforms, such as learning modules, tutorials, and recipes	2	4.17
School facilities, including kitchen and baking equipment, Textbooks and manuals provided by the school or DepEd	3	6.25
Online platforms, such as learning modules, tutorials, and recipes, Textbooks and manuals provided by the school or DepEd	2	4.17
School facilities, including kitchen and baking equipment, Textbooks and manuals provided by the school or DepEd, Industry partnerships, including suppliers, bakeries, and guest speakers	2	4.17

School facilities, including kitchen and baking equipment, Textbooks and manuals provided by the school or DepEd, Industry partnerships, including suppliers, bakeries, and guest speakers, School budget or allocated funds for ingredients, tools, and equipment	1	2.08
School facilities, including kitchen and baking equipment, Industry partnerships, including suppliers, bakeries, and guest speakers, School budget or allocated funds for ingredients, tools, and equipment	1	2.08
Total	48	100

Table 6 shows that school facilities remain the most accessible resource among students, which reflects strong reliance on in-school kitchen and baking equipment for practical learning. This aligns with Blanca (2021), who emphasized that vocational learning depends heavily on the availability of instructional time and materials, especially in hands-on subjects like Bread and Pastry Production. The result also supports TVET Africa (2021)¹⁰, which noted that limited access to complete industrial equipment affects the quality of practical training in vocational education. On the other hand, industry partnerships recorded the lowest frequency, showing weak external support from suppliers, bakeries, and guest speakers. This limitation may reduce exposure to real industry practices. The findings also reflect DepEd-related challenges on resource allocation, where schools often depend more on internal facilities than external collaborations. Mixed responses in combined indicators suggest that students experience uneven access to multiple resources at the same time, depending on school capacity and support systems.

4. Factors Affecting the Performance of Students in Bread and Pastry Production

4.1. Facilities and Resources

This section presents Facilities and Resources as one of the key factors affecting the performance of students in Bread and Pastry Production NCII. It describes the availability and adequacy of school facilities, equipment, tools, ingredients, and learning materials that support students in performing practical baking tasks. The discussion highlights how access to these resources influences students' skill development and overall performance in the subject.

Table 7 Factors Affecting the Performance of Students in Bread and Pastry Production along Facilities and Resources

Indicators	WM	VI	R
Availability of functioning ovens and baking equipment	4.69	VHI	1
Sufficient number of baking utensils	4.38	VHI	5.5
Adequate supply of ingredients for practice and assessment	4.19	HI	8.5
Access to proper storage facilities	4.19	HI	8.5
Safety and cleanliness of the kitchen/laboratory	4.58	VHI	2
Availability of instructional materials	4.38	VHI	5.5
Proper ventilation and lighting in the baking area	4.40	VHI	4
Functioning demonstration tools	4.29	VHI	7
Access to maintenance support for equipment	4.46	VHI	3
Availability of personal protective equipment	4.10	HI	10
Average Weighted Mean	4.44	VHI	

Legend:

Scale Range

1.00–1.79
1.80–2.59
2.60–3.39
3.40–4.19
4.20–5.00

Verbal Interpretation

Very Low Influence (VLI)
Low Influence (LI)
Moderate Influence (MI)
High Influence (HI)
Very High Influence (VHI)

Table 7 reveals that physical facilities and equipment such as ovens, baking tools, and maintenance support strongly influence student performance in Bread and Pastry Production. This confirms Blanca (2021)¹¹, who stressed that vocational learning is highly dependent on the availability and proper use of instructional materials and facilities,

especially in hands-on subjects. The result also supports Prasetyono et al. (2021)¹², who emphasized that adequate technical facilities improve learning outcomes in TVET programs. The high ratings on safety, cleanliness, and maintenance further reflect the findings of Gregorio (2021)¹³, which highlighted that well-managed learning environments improve student engagement and skill acquisition. On the other hand, lower ratings on personal protective equipment, ingredients, and storage facilities suggest gaps in consumable resources and safety provisions. This aligns with Torres et al. (2019), who noted that limited access to complete materials affects the quality of practical training and skill development in baking-related courses.

4.2. Performance Tasks

The Bread and Pastry Production NC II qualification consists of competencies and performance tasks that a person must achieve to prepare and produce bakery products, prepare and produce pastry products, prepare and present gateaux, tortes and cakes, prepare and display petit fours, and present deserts.

Table 8 Factors Affecting the Performance of Students in Bread and Pastry Production along Performance Tasks

Indicators	WM	VI	R
Clear instructions provided for each practical task.	4.5	VI	5.5
Tasks match the competencies required by NCII standards.	4.77	VHI	1
Assessment criteria are understood by students.	4.65	VHI	2.5
Tasks allow students to demonstrate creativity and skill.	4.25	VHI	10
Tasks provide opportunities for timed practice.	4.5	VHI	5.5
Tasks are structured to gradually increase in difficulty.	4.27	VHI	9
Feedback on tasks is timely and constructive.	4.4	VHI	7.5
Tasks allow collaboration and teamwork where appropriate.	4.63	VHI	4
Variety of tasks exposes students to different bread and pastry products.	4.65	VHI	2.5
Tasks simulate real workplace scenarios.	4.4	VHI	7.5
Average Weighted Mean	4.55	VHI	

Table 8 presents that alignment of tasks with NC II standards, clarity of assessment criteria, and variety of learning activities are the strongest factors influencing student performance. This supports Rodil et al. (2021)¹⁴, who found that well-structured competencies in Bread and Pastry Production significantly improve students' skill development and mastery of core tasks. The result also aligns with Santos (2023)¹⁵, who emphasized that clearly defined training tasks and assessment criteria enhance learning effectiveness and employability outcomes. The high ratings on collaboration and workplace simulation are consistent with Johnson & Johnson (2021), who highlighted that cooperative learning improves critical thinking and practical performance in vocational education.

4.3. Work Immersion

Bread and Pastry Production NCII as 141-hour TESDA-certified course trains individuals to prepare, produce, and present bakery products, pastries, cakes, and petit fours. It covers core skills in baking, decorating, and storing products, preparing trainees for careers as bakers. The course, which can be completed in approximately 18 days, emphasizes food safety, sanitation, and proper equipment usage.

Table 9 Factors Affecting the Performance of Students in Bread and Pastry Production along Work Immersion

Indicators	WM	VI	R
Opportunities to observe professional bakers in actual workplaces.	4.52	VHI	9
Hands-on practice under supervision during immersion.	4.54	VHI	8
Exposure to proper workplace etiquette and safety standards.	4.63	VHI	3.5
Learning workplace time management and efficiency.	4.63	VHI	3.5
Interaction with experienced staff for mentoring.	4.63	VHI	3.5
Understanding workflow and production planning.	4.58	VHI	6
Opportunities to apply classroom skills in real-life settings.	4.63	VHI	3.5
Feedback from industry supervisors on performance.	4.46	VHI	7
Exposure to different bakery operations (bread, pastries, desserts).	4.42	VHI	10
Reflection activities to connect immersion experience with learning.	4.75	VHI	1
Average Weighted Mean	4.6	VHI	

Table 9 indicates that reflective learning, workplace exposure, and mentoring experiences are the strongest contributors to student performance during work immersion. This supports Santos and Aquino (2023), who emphasized that immersion experiences significantly improve skill acquisition and employability when learners engage in real workplace environments. The result also aligns with Njau et al. (2022), who found that exposure to actual industry practices enhances entrepreneurial and technical competencies.

4.4. Students' Interest

Students' interest was usually enhanced by teachers by providing them with vast information and other important requirements such as information on curriculum design; training delivery; trainee entry requirements; tools and equipment; training facilities; and trainer's qualification in which their interest was motivated in choosing bread and pastry courses.

Table 10 Factors Affecting the Performance of Students in Bread and Pastry Production along Student Interests

Indicators	WM	VI	R
Willingness to participate actively in practical sessions.	4.83	VHI	1
Enthusiasm in learning new recipes and techniques.	4.67	VHI	3
Motivation to improve existing skills.	4.58	VHI	7
Curiosity to experiment with different ingredients or designs.	4.65	VHI	4.5
Frequency of voluntary practice outside class hours.	4.54	VHI	8.5
Engagement in class discussions and demonstrations.	4.54	VHI	8.5
Enjoyment in completing performance tasks.	4.81	VHI	2
Desire to pursue a career in baking or culinary arts.	4.23	VHI	10
Positive attitude towards learning challenges.	4.65	VHI	4.5
Interest in attending workshops or extra training sessions.	4.6	VHI	6
Average Weighted Mean	4.63	VHI	

Table 10 demonstrates that student willingness, enjoyment, and enthusiasm are the strongest factors influencing performance in Bread and Pastry Production. This supports Garcia (2021)¹⁶, who emphasized that learner motivation and active participation significantly improve skill acquisition in technical-vocational education. The result also aligns

with Delfino (2021), who found that student engagement and positive attitudes contribute to higher performance and better learning outcomes in hands-on subjects. The high ratings on curiosity and openness to challenges are consistent with Mukarromah et al. (2021), who highlighted that exploratory learning behaviors enhance creativity and technical competence in vocational training.

4.5. Learning Modality

The learning modality utilized by teachers in teaching the track course on Bread and Pastry Production should have lecture and demo area, students/trainee spaces, laboratory, learning resource center and vast facilities and equipment and be applied with hands-on learning, using visual aids, collaboration, blended learning and many others.

Table 11 Factors Affecting the Performance of Students in Bread and Pastry Production along Learning Modality

Indicators	WM	VI	R
Preference for hands-on learning vs. theoretical instruction.	4.54	VHI	7.5
Effectiveness of demonstrations in improving skills.	4.52	VHI	9
Understanding through visual aids.	4.6	VHI	3
Learning through group collaboration and peer observation.	4.67	VHI	1
Ability to learn via self-paced practice.	4.58	VHI	5
Engagement in blended learning.	4.58	VHI	5
Clarity of instructions in modular or printed learning guides.	4.46	VHI	10
Use of reflective journals or portfolios to track progress.	4.58	VHI	5
Adaptability to different learning methods.	4.54	VHI	7.5
Satisfaction with current learning modality.	4.65	VHI	2
Average Weighted Mean	4.61	VHI	

Table 11 presents the factors affecting the performance of students in Bread and Pastry Production along learning modality. It shows that learning through group collaboration and peer observation obtained the highest weighted mean of 4.67 with very high influence and ranked first. Satisfaction with current learning modality indicates 4.65 with very high influence ranked second. Understanding through visual aids presents 4.60 with very high influence ranked third. Ability to learn via self-paced practice, engagement in blended learning, and use of reflective journals or portfolios all record 4.58 with very high influence and ranked fifth. Preference for hands-on learning versus theoretical instruction and adaptability to different learning methods both show 4.54 with very high influence and ranked 7.5. Effectiveness of demonstrations in improving skills indicates 4.52 with very high influence ranked ninth. Clarity of instructions in modular or printed learning guides obtained the lowest weighted mean of 4.46 with very high influence and ranked tenth. The average weighted mean is 4.61 with very high influence.

4.6. Skill Preferences

This section presents Skill Preferences as one of the factors affecting the performance of students in Bread and Pastry Production NCII. It refers to the skills that are preferred or valued in the workplace, particularly those that employers or companies look for in individuals performing baking and pastry-related tasks. The discussion focuses on how alignment between students' acquired skills and industry-preferred skills may influence their performance, readiness, and employability in the field.

Table 12 Factors Affecting the Performance of Students in Bread and Pastry Production along Learning Preferences

Indicators	WM	VI	R
Preference for baking bread over pastries, or vice versa.	4.67	VHI	5
Enjoyment of decorating or presenting baked products.	4.69	VHI	3.5
Interest in experimenting with new flavors and recipes.	4.77	VHI	1
Confidence in using specific tools or machines.	4.50	VHI	10
Preference for individual vs. group tasks.	4.63	VHI	6
Interest in speed and efficiency tasks.	4.60	VHI	7
Enjoyment of detailed and precise work.	4.58	VHI	8
Preference for practical tasks over written assessments.	4.52	VHI	9
Desire to specialize in a particular bakery product.	4.69	VHI	3.5
Willingness to learn advanced baking techniques.	4.75	VHI	2
Average Weighted Mean	4.64	VHI	

Table 12 presents the factors affecting the performance of students in Bread and Pastry Production along learning preferences. It shows that interest in experimenting with new flavors and recipes obtained the highest weighted mean of 4.77 with very high influence and ranked first. Willingness to learn advanced baking techniques indicates 4.75 with very high influence ranked second. Enjoyment of decorating or presenting baked products and desire to specialize in a particular bakery product both record 4.69 with very high influence and ranked 3.5. Preference for baking bread over pastries or vice versa presents 4.67 with very high influence ranked fifth. Preference for individual versus group tasks shows 4.63 with very high influence ranked sixth. Interest in speed and efficiency tasks indicates 4.60 with very high influence ranked seventh. Enjoyment of detailed and precise work reflects 4.58 with very high influence ranked eighth. Preference for practical tasks over written assessments presents 4.52 with very high influence ranked ninth. Confidence in using specific tools or machines obtained the lowest weighted mean of 4.50 with very high influence and ranked tenth. The average weighted mean is 4.64 with very high influence.

5. Conclusions

Based on the findings, the following conclusions were drawn:

- The socio-demographic profile of the students in Bread and Pastry Production NC II concludes that most respondents are female, belong to low-income families, have parents with basic to secondary education, receive moderate parental support, show strong interest in hands-on baking, and have limited access to external learning resources.
- The factors influencing the performance of students in Bread and Pastry Production NC II conclude that work immersion, students' interests, and skill preferences are the most influential variables, while facilities and resources, performance tasks, and learning modality also contribute but with slightly lower influence.
- The test of significant relationship between the demographic profile and the factors influencing students' performance in Bread and Pastry Production NC II shows that variables such as sex, income, educational attainment, parental involvement, and students' interest have significant relationships in most cases, while access to resources generally shows no significant relationship.
- The proposed intervention materials in Bread and Pastry Production NC II conclude that targeted digital learning resources focusing on PPE, creative performance tasks, work immersion enhancement, and career motivation are necessary to address the least-rated indicators and improve students' competencies.

Compliance with ethical standards

Acknowledgments

With sincere gratitude, the researcher offers her highest praise to God Almighty for His wisdom, strength, and constant guidance throughout the completion of this research.

She extends her heartfelt appreciation to Dr. Jose B. Ballesteros, OIC of Graduate Studies and Research, for his meaningful insights and words of encouragement that inspired her to continue and accomplish this study.

Her deepest thanks go to her mentor, Dr. Nerwin R. Ibarrientos, for his consistent guidance, genuine concern, and unwavering support from the beginning until the completion of this research. His direction greatly contributed to the development of this study.

The researcher is also truly grateful to the members of the thesis committee for their expertise, valuable suggestions, and constructive feedback that helped improve the quality of this work.

She likewise acknowledges her classmates, friends, and mentors for their support, encouragement, and assistance, which motivated her to overcome the challenges encountered during this journey.

Above all, she expresses her profound gratitude to her family—her husband, parents, and siblings—for their unconditional love, sacrifices, and constant support, which have been her greatest source of inspiration and strength. This achievement would not have been possible without the guidance and support of all the people who have been part of this journey.

Disclosure of conflict of interest

I declare that I have no conflicts of interest related to this research. I have no personal or financial relationships that could influence my work.

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

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