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Student's Perspectives on the Challenges and Potentials in Technology and Vocational Livelihood-Cookery Strand to Culinary Education

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Abstract*—This study aims to analyze student's perspective on challenges and prospects in TVL-cookery strand to their culinary education in the district of Santa Cruz, Laguna. Specifically, it seeks to answers to the following research questions, the level of student's Perspective on Challenges in TVL-Cookery strand, student's potential in TVL Cookery Strand and the level of the culinary education. Furthermore, the significant relationship between the student's perspective on challenges and potential in TVL- Cookery strand and culinary education. The study utilized a descriptive-correlational research design to examine the challenges and potential of students in the TVL-Cookery Strand. Employing a quota sampling technique, the respondents were selected from among the students enrolled in the TVL-Cookery strand. A researcher-made questionnaire, validated by experts and tested for reliability, was used to gather data. Statistical treatments included weighted mean, and standard deviation as well as Pearson-r correlation to analyze the data and test the hypotheses. The research procedure involved obtaining necessary permissions, administering the questionnaire, and analyzing the data to draw meaningful conclusions. The following were the findings of the study. The level of student's perspectives on the challenges in TVL-Cookery strand, the student's potential in the TVL- Cookery strand and culinary education were all very high. This implies that students have a strong foundation in essential culinary skills, making them more competent in kitchen settings. A significant relationship between students' perspective on challenges in TVL-Cookery Strand and potential and Culinary Education was observed in all indicators. This means that the challenges they face are closely tied to their culinary learning experience. In view of the findings of the study, the researcher concluded the following: A significant relationship between the student's perspective on challenges in Technology and potential in TVL-Cookery on culinary education were evident, thus, both hypotheses were rejected. This indicates that minimizing challenges in instructional delivery, resource availability, healthcare safety, technology integration, and educational innovation contributes to higher student competency in menu planning and development, knife skills, recipe execution, and time management. The following recommendations are made in light of the research's results and conclusions. It is recommended that teachers and school administrators continue delivering clear and engaging instruction while integrating innovative teaching strategies and technology to enhance students' learning experiences. It is also suggested that classrooms and food laboratories be fully equipped with the necessary tools, materials, and safety equipment to support practical and hands-on learning. Furthermore, it is recommended that teachers be provided with regular professional development opportunities and updated teaching materials to maintain high-quality culinary instruction.*

***Keywords*—** *Instructional Challenges, Educational Innovation, Skill Development, Professional Growth, Menu Planning, Culinary Tools*

I. INTRODUCTION

The Technical-Vocational-Livelihood (TVL) track, specifically Cookery, has gained significant relevance in the Philippine senior high school curriculum, Al-Bakry (2024), as it equips learners with practical skills aligned with industry demands and livelihood opportunities. With such, as a versatile and forward-thinking educational approach technical-Vocational-Livelihood (TVL) education is designed to equip students with the necessary skills and knowledge to thrive in an array of career fields.

In line with this, culinary arts represent just one of the many industries that TVL caters to. This educational model recognizes the evolving nature of the job market and the imperative of offering practical, hands-on experiences to prepare students for their professional journeys. In particular, the culinary arts branch of TVL education stands out as a dynamic and creative field, encompassing much more than just culinary skills, Del Villar (2019).

Students in this track learn not only the art of cooking but also the nuances of culinary innovation, artistic presentation, and effective management of culinary enterprises, Bristol Associates (2025). With this, the importance of tailoring TVL cookery education to meet the unique needs and aspirations of individual students cannot be overstated. As students enter these programs, they bring with them diverse backgrounds, interests, and career aspirations. Thus, gaining a profound understanding of their perspectives on TVL cookery education is essential in this endeavor.

Parallel with Fauzi et al. (2024) limited access to proper kitchen facilities and ingredients, lack of updated and industry-relevant training tools, insufficient practicum opportunities, and varying levels of teacher expertise are still problem. Furthermore, students often grapple with low confidence, limited exposure to real-world culinary environments, and social perceptions that sometimes undervalue vocational tracks compared to academic strands. DepEd Tambayan (2025).

On the other hand, students also recognize the potential that come with TVL Cookery education, such as the opportunity to develop hands-on culinary skills, explore future employment or business ventures in the food industry, and

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attain national certifications that enhance their qualifications. Franchise Flow (2024).

This research initiative is driven by the objective of understanding the relationships on students' perspectives challenges and potentials encountered as they pursue TVL-Cookery strand for culinary education competencies.

1.1 Statement of the Problem

Problem/s which were addressed by the research

This study aims to analyze student's perspective on challenges and prospects in TVL-cookery strand to their culinary education in the district of Santa Cruz, Laguna.

Specifically, it seeks to answers to the following research questions.

1. What is the level of student's Perspective on Challenges in TVL-Cookery strand in terms of:
   1.1 instructional challenge;
   1.2 resource limitation;
   1.3 healthcare safety consideration;
   1.4 technology integration; and
   1.5 educational innovation?
2. What is the level of student's potential in TVL Cookery Strand in terms of:
   2.1. growing culinary opportunities;
   2.2. skills Development;
   2.3. interest in entrepreneurial Opportunities; and
   2.4. professional growth?
3. What is the level of the Culinary Education in terms of:
   3.1 menu planning and development;
   3.2 knife skills;
   3.3 recipe execution; and
   3.4 time management?
4. Is there a significant relationship between the student's perspective on challenges in TVL- Cookery strand and culinary education.
5. Is there a significant relationship between the student's potential of TVL-Cookery strand and culinary education?

II. Methodology

The study utilized a descriptive-correlational research design to examine the challenges and potential of students in the TVL-Cookery Strand. Employing a quota sampling technique, the respondents were selected from among the students enrolled in the TVL-Cookery strand. A researcher-made questionnaire, validated by experts and tested for reliability, was used to gather data. Statistical treatments included weighted mean, and standard deviation as well as Pearson-r correlation to analyze the data and test the hypotheses. The research procedure involved obtaining necessary permissions, administering the questionnaire, and analyzing the data to draw meaningful conclusions.

III. Results and Discussion

This chapter discusses the results that were yielded from the treatment of the data that was gathered in this study. The following tabular presentations and discussions will further analyze how student's perspective on challenges and prospects in TVL - Cookery strand is related to their culinary education.

Level of Student's Perspective on Challenges of TVL - Cookery Strand

In this study, the level of Student's Perspective On Challenges of TVL - Cookery Strand were describe in terms of instructional challenge, resource limitation, healthcare safety consideration, technology integration, and educational innovation and was determined by mean and standard deviation.

The Table 1 presents the level of student's perspective on challenges of TVL - cookery strand in terms of instructional challenge.

Table 1. Level of Student's Perspective on Challenges of TVL - Cookery Strand in terms of Instructional Challenge

STATEMENT	Mean	SD	Remarks
Teachers are able to adjust their teaching methods to suit different learning styles.	4.78	0.47	Strongly Agree
Lessons are supported by updated teaching materials and equipment.	4.67	0.51	Strongly Agree
Teachers manage their time well despite having multiple responsibilities.	4.71	0.48	Strongly Agree
Teachers have access to professional development that improves their instruction.	4.69	0.50	Strongly Agree
Lessons are delivered clearly and thoroughly within the given time frame.	4.82	0.42	Strongly Agree
Weighted Mean	4.73		
SD	0.52		
Verbal Interpretation	Very High		

As presented, teachers were able to clearly and thoroughly deliver lessons within the given time and adjust their teaching methods to suit different learning styles despite having multiple responsibilities. Teachers manage their time well. They also ensure access to professional development and update teaching materials and equipment to improve instruction.

The level of student's perspective on challenges of TVL - cookery strand in terms of instructional challenge gained the overall weighted mean of 4.73 with a standard deviation of 0.52, verbally interpreted as Very High Challenged. This indicates that students strongly agreed that teachers were not facing much challenge when it comes to the delivery of instruction.

In summary, the results imply that teachers were able to deliver lessons by applying teaching methods suitable to different types of learners in order for them to acquire the desired knowledge in culinary despite of having other responsibilities to attend to. The findings also reveal that teachers effectively utilize available materials and equipment to enhance instructional quality in the culinary program. Moreover, the high weighted mean indicates strong overall satisfaction with the teachers' performance in managing instruction and professional growth. Additionally, the low standard deviation suggests consistency in the teachers' ability to balance multiple duties while maintaining effective lesson delivery.

Table 2 shows the level of student's perspective on challenges of TVL-Cookery strand in terms of resource limitation.

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As presented, classrooms are adequately equipped with learning tools and materials, students have equal access to reference books and updated modules, and resources needed for hands-on activities are readily available. The learning environment is conducive, and the school has sufficient laboratory or workshop equipment when needed, ensuring that students can apply theoretical knowledge through hands-on practice effectively.

Table 2. Level of Student's Perspective on Challenges of TVL - Cookery Strand in terms of Resource Limitation

STATEMENT	Mean	SD	Remarks
Classrooms are fully equipped with adequate learning tools and materials.	4.81	0.42	Strongly Agree
Students have equal access to reference books and updated modules.	4.80	0.43	Strongly Agree
Resources needed for hands-on activities are readily available.	4.88	0.37	Strongly Agree
Learning environment is conducive for the students.	4.83	0.38	Strongly Agree
School have sufficient laboratory or workshop equipment when needed.	4.90	0.30	Strongly Agree
Weighted Mean	4.84		
SD	0.46		
Verbal Interpretation	Very High		

The level of student's perspective on challenges of TVL-Cookery strand in terms of resource limitation gained an overall weighted mean of 4.84 with a standard deviation of 0.46, verbally interpreted as Very High Challenge. This indicates that students strongly agreed that teachers and students are not facing much challenge regarding the availability and adequacy of resources.

In summary, the results imply that teaching and learning in the TVL-Cookery strand are well-supported by available resources, allowing students to actively engage in practical and theoretical activities without significant limitations.

Level of Student's Perspective on Challenges of TVL - Cookery Strand in terms of Healthcare Safety Consideration

Table 3 presents the level of student's perspective on challenges of TVL-Cookery strand in terms of healthcare safety consideration.

As presented, health protocols are properly implemented and observed, proper ventilation is maintained in classrooms and food laboratories, and medical supplies and first-aid kits are available and accessible. Additionally, functioning handwashing and dishwashing stations are provided throughout the food laboratories.

The level of student's perspective on challenges of TVL-Cookery strand in terms of healthcare safety consideration gained an overall weighted mean of 4.75 with a standard deviation of 0.54, verbally interpreted as Very High Challenge.

This indicates that students strongly agreed that teachers and students face minimal challenges in maintaining healthcare and safety standards during culinary activities.

The passage indicates that students enrolled in the TVL-Cookery strand encounter only minor difficulties in upholding healthcare and and safety standard while engaging in culinary activities.

Table 3. Level of Student's Perspective on Challenges of TVL - Cookery Strand in terms of Healthcare Safety Consideration

STATEMENT	Mean	SD	Remarks
Health protocols are properly implemented and observed.	4.70	0.48	Strongly Agree
Proper ventilation is maintained in classrooms and other school areas.	4.81	0.39	Strongly Agree
Medical supplies and first-aid kits are available and accessible especially inside the food laboratories.	4.78	0.50	Strongly Agree
Proper ventilation for cooking is maintained in classrooms and other school areas.	4.73	0.52	Strongly Agree
There are functioning hand washing and dish washing stations available throughout the food laboratories.	4.75	0.51	Strongly Agree
Weighted Mean	4.75		
SD	0.54		
Verbal Interpretation	Very High		

This suggests the curriculum is designed in a way that integrates practical cooking tasks with manageable health protocols allowing learners to focus on skill development without being overwhelmed by complex safety requirements.
In summary, the results imply that the TVL-Cookery strand provides a safe and well-monitored environment, ensuring that proper health and safety measures are observed, which supports effective teaching and learning while minimizing risks.

Table 4. Level of Student's Perspective On Challenges of TVL - Cookery Strand in terms of Technology Integration

Statements	Mean	SD	Remarks
Lessons are more engaging because of the use of multimedia and technology.	4.46	0.65	Strongly Agree
Students are given opportunities to use technology for class activities and assignments.	4.59	0.63	Strongly Agree
Online platforms are used for learning to make it more engaging and interactive.	4.45	0.63	Strongly Agree
Teachers integrate educational apps and programs into lessons.	4.64	0.53	Strongly Agree
Digital presentations and videos are often used to enhance understanding.	4.46	0.63	Strongly Agree
Weighted Mean	4.52		
SD	0.66		
Verbal Interpretation	Very High		

Table 4 presents the level of student's perspective on challenges of TVL-Cookery strand in terms of technology integration.

As presented, lessons are made more engaging through the use of multimedia and technology, students are provided opportunities to utilize technology for class activities and assignments, and online platforms are employed to make learning interactive. Teachers also integrate educational apps and programs into lessons, while digital presentations and videos are regularly used to enhance understanding.

The level of student's perspective on challenges of TVL-Cookery strand in terms of technology integration gained an overall weighted mean of 4.52 with a standard deviation of 0.66, verbally interpreted as Very High Challenged. This indicates that students strongly agreed that teachers face

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minimal challenges in incorporating technology into their lessons.

The study shows that blending technology into the TVL-Cookery strand makes teaching and learning smoother and more engaging. When technology tools are used in the classroom, students get a better grasp of cookery concepts because the lessons become more interactive and visual. Teachers also find it easy to incorporate these digital resources without facing major hurdles. Which means instructional process stays efficient and effective for both the educators and the learners.

In summary, the results imply that technology is effectively integrated into teaching and learning in the TVL-Cookery strand, enhancing student engagement and understanding while posing very little difficulty for both teachers and learners.

Level of Student's Perspective on Challenges of TVL - Cookery Strand in terms of Educational Innovation

Table 5 presents the level of student's perspective on challenges of TVL-Cookery strand in terms of educational innovation.

As presented, students are encouraged to explore and apply their learning in real-life situations, while group work and project-based learning are commonly practiced in class.

Table 5. Level of Student's Perspective On Challenges of TVL - Cookery Strand in terms of Educational Innovation

Statements	Mean	SD	Remarks
Students are encouraged to explore and apply what they learn in real-life situations.	4.31	0.62	Strongly Agree
Group work and project-based learning are commonly practiced in class.	4.39	0.70	Strongly Agree
Students are exposed to industry-based or real-world scenarios during lessons.	4.36	0.71	Strongly Agree
Creative outputs and original ideas are appreciated and rewarded.	4.59	0.56	Strongly Agree
Teachers often use interactive and modern techniques in instruction.	4.23	0.69	Strongly Agree
Weighted Mean	4.38		
SD	0.70		
Verbal Interpretation	Very High		

Students are also exposed to industry-based or real-world scenarios during lessons, creative outputs and original ideas are recognized and rewarded, and teachers frequently use interactive and modern instructional techniques.

The level of student's perspective on challenges of TVL-Cookery strand in terms of educational innovation gained an overall weighted mean of 4.38 with a standard deviation of 0.70, verbally interpreted as Very High Challeng. This indicates that students strongly agreed that teachers face minimal challenges in implementing innovative teaching strategies.

In summary, the results imply that the TVL-Cookery strand promotes creativity, practical application, and interactive learning, allowing students to engage with modern educational practices while encountering very little difficulty.

Level of Student's Potential in TVL Cookery Strand

This section presents the level of students' potential in the TVL Cookery Strand. It aims to assess students' capacities and preparedness in terms of four key areas: Growing Culinary Opportunities, Skills Development, Interest in Entrepreneurial Opportunities, and Professional Growth.

The analysis utilizes descriptive statistics, particularly mean and standard deviation, to determine the extent to which students demonstrate potential in these areas, providing insights into their strengths and areas for further development within the TVL Cookery program.

Table 6 presents the level of student's potential in the TVL-Cookery strand in terms of growing culinary opportunities.

Table 6. Level of Student's Potential in TVL Cookery Strand in terms of Growing Culinary Opportunities

Statements	Mean	SD	Remarks
Curriculum prepares students for employment in restaurants, hotels, or food businesses.	4.31	0.64	Strongly Agree
TVL Culinary Education offers various career paths in the food and hospitality industry.	4.74	0.44	Strongly Agree
Culinary skills acquired from TVL programs are applicable to employment in restaurants, hotels, and catering businesses.	4.49	0.67	Strongly Agree
Opportunities for establishing a small food business are made possible through the knowledge gained in cookery education.	4.40	0.72	Strongly Agree
International employment is a viable option for graduates with relevant culinary certifications.	4.51	0.67	Strongly Agree
Weighted Mean	4.49		
SD	0.69		
Verbal Interpretation	Very High		

As presented, the curriculum prepares students for employment in restaurants, hotels, and food businesses, while TVL-Culinary education provides various career paths in the food and hospitality industry. Culinary skills acquired through the program are applicable to real-world employment, opportunities for establishing small food businesses are facilitated by the knowledge gained, and international employment is a viable option for graduates with relevant certifications.

The level of student's potential in the TVL-Cookery strand in terms of growing culinary opportunities gained an overall weighted mean of 4.49 with a standard deviation of 0.69, verbally interpreted as Very High Potential. This indicates that students strongly agreed that the TVL-Cookery program equips them with skills and knowledge that open diverse career opportunities locally and internationally.

In summary, the results imply that students in the TVL-Cookery strand possess strong potential to pursue professional careers or entrepreneurial ventures in the culinary field, reflecting the program's effectiveness in preparing them for real-world opportunities.

Table 7 presents the level of student's potential in the TVL-Cookery strand in terms of skills development.

As presented, TVL-Culinary education enhances practical cooking skills necessary for real kitchen settings, strengthens knowledge in food preparation, handling, and safety, and helps learners become more precise and consistent in recipe execution.

The level of student's potential in the TVL-Cookery strand in terms of skills development gained an overall weighted

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mean of 4.56 with a standard deviation of 0.63, verbally interpreted as Very High. This indicates that students strongly agreed that the program effectively develops their culinary skills, technical abilities, and practical competencies.

Table 7. Level of Student's Potential in TVL Cookery Strand in terms of Skills Development

Statements	Mean	SD	Remarks
TVL Culinary Education enhances practical cooking skills needed in real kitchen settings.	4.48	0.61	Strongly Agree
Training in cookery strengthens knowledge in food preparation, handling, and safety.	4.76	0.43	Strongly Agree
TVL programs help learners become more precise and consistent in recipe execution.	4.49	0.59	Strongly Agree
Exposure to actual kitchen tools and equipment builds technical proficiency	4.40	0.66	Strongly Agree
Time management and multitasking skills are improved through culinary tasks and simulations.	4.65	0.53	Strongly Agree
Weighted Mean	4.56		
SD	0.63		
Verbal Interpretation	Very High		

In summary, the results imply that the TVL-Cookery strand equips students with essential skills for both professional kitchen environments and culinary-related careers, highlighting the strand's effectiveness in preparing students for practical and technical challenges in the field. Moreover, the TVL-Cookery program fosters creativity and innovation, enabling learners to develop unique culinary techniques that set them apart in the industry. Consequently, graduates of the strand are better positioned to pursue diverse opportunities, ranging from restaurant management to entrepreneurship in the food sector.

The program strongly develops students' culinary skills, technical abilities, and practical competencies, as evidenced by a very high agreement among students (with a standard deviation of o.63). This means the TVL-Cookery curriculum is successful in giving learners the tools they need to handle real real-world kitchen tasks and to pursue careers in the culinary industry, making them ready for the technical and hands-on demands of professional cooking environments.

Table 8. Level of Student's Potential in TVL Cookery Strand in terms of Interest in Entrepreneurial Opportunities

Statements	Mean	SD	Remarks
Lessons in cookery include basic concepts of pricing, costing, and profit calculation.	4.51	0.57	Strongly Agree
Creating original food products is promoted as part of entrepreneurial learning	4.50	0.57	Strongly Agree
Market research and customer preference analysis are introduced through culinary projects.	4.59	0.59	Strongly Agree
Exposure to real-life food business models increases entrepreneurial interest.	4.60	0.56	Strongly Agree
TVL programs highlight the importance of branding, packaging, and product presentation.	4.50	0.59	Strongly Agree
Weighted Mean	4.54		
SD	0.62		
Verbal Interpretation	Very High		

Table 8 presents the level of student's potential in the TVL-Cookery strand in terms of interest in entrepreneurial opportunities.

As presented, lessons in cookery include basic concepts of pricing, costing, and profit calculation. Students are encouraged to create original food products as part of entrepreneurial learning, while market research and customer preference analysis are integrated through culinary projects. Exposure to real-life food business models further increases entrepreneurial interest, and TVL programs emphasize the importance of branding, packaging, and product presentation. The level of student's potential in the TVL-Cookery strand in terms of entrepreneurial interest gained an overall weighted mean of 4.54 with a standard deviation of 0.62, verbally interpreted as Very High.

The TVL-Cookery strand is shown to have a profound impact on students, not only teaching them essential culinary techniques but also instilling an entrepreneurial spirit that encourages them to pursue business ventures in the food industry. The program's high effectiveness in nurturing interest in culinary entrepreneurship suggests that students gain both practical cooking skills and the mindset needed to innovate and capitalize on opportunities within the culinary sector. As exemplified by successful chefs like Gordon Ramsay, who transformed his culinary expertise into a thriving entrepreneurial brand, the program prepares students to follow similar paths of culinary and business excellence.

In summary, the results imply that the TVL-Cookery strand not only equips students with culinary skills but also fosters an entrepreneurial mindset, preparing them to explore business opportunities in the food industry.

Table 9. Level of Student's Potential in TVL Cookery Strand in terms of Professional Growth

Statements	Mean	SD	Remarks
TVL Culinary Education builds competencies that are essential for professional kitchen environments.	4.51	0.57	Strongly Agree
Students are prepared to meet industry expectations through standard-based culinary instruction.	4.50	0.57	Strongly Agree
Exposure to real-world culinary practices contributes to the development of a professional mindset.	4.59	0.59	Strongly Agree
TVL programs promote continuous learning and adaptability in a fast-changing food industry.	4.60	0.56	Strongly Agree
TVL cookery equips students with the qualifications needed for long-term career growth in the culinary field.	4.50	0.59	Strongly Agree
Weighted Mean	4.61		
SD	0.62		
Verbal Interpretation	Very High		

Table 9 presents the level of student's potential in the TVL-Cookery strand in terms of professional growth.

As presented, TVL-Culinary education builds competencies essential for professional kitchen environments, preparing students to meet industry expectations through standard-based instruction. Exposure to real-world culinary practices contributes to the development of a professional mindset, while the program promotes continuous learning and adaptability in the fast-changing food industry. Additionally, TVL-Cookery equips students with the qualifications needed for long-term career growth in the culinary field.

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The level of student's potential in the TVL-Cookery strand in terms of professional growth gained an overall weighted mean of 4.61 with a standard deviation of 0.62, verbally interpreted as Very High. This indicates that students strongly agreed that the program effectively prepares them for professional advancement in the culinary industry.

In summary, the results imply that the TVL-Cookery strand not only develops technical and practical skills but also fosters professional competencies and long-term career readiness for students pursuing culinary careers and significantly enhances their employability in the culinary industry. Thereby contributing to the overall growth of the culinary workforce.

Level of Student's Competencies in Culinary Education

This section presents the level of students' competencies in Culinary Education within the TVL Cookery Strand. The study focuses on four critical areas: Menu Planning and Development, Knife Skills, Recipe Execution, and Time Management.

The analysis uses descriptive statistics, particularly mean and standard deviation, to determine the extent to which students demonstrate competence in these areas, providing a clear understanding of their strengths, areas for improvement, and readiness for future culinary challenges.

Table 10. Level of Student's Competencies in Culinary Education in terms of Menu Planning and Development

Statements	Mean	SD	Remarks
Select dishes that meet nutritional standards and dietary needs.	4.78	0.47	Strongly Agree
Understand food costs to design a cost-effective and profitable menu.	4.67	0.51	Strongly Agree
Consider various cultural, religious, and dietary restrictions in making menus.	4.71	0.48	Strongly Agree
Develop sustainable menus using seasonal and locally sourced ingredients	4.69	0.50	Strongly Agree
Provide a well-balanced menu includes a variety of courses such as appetizers, main dishes, and desserts.	4.82	0.42	Strongly Agree
Weighted Mean	4.73		
SD	0.52		
Verbal Interpretation	Very Highly		

Table 10 presents the level of students' competencies in Culinary Education specifically in Menu Planning and Development. The findings reveal that students strongly agreed that they are capable of selecting dishes that meet nutritional standards and dietary needs, understanding food costs to create cost-effective menus, considering cultural, religious, and dietary restrictions, developing sustainable menus using seasonal and locally sourced ingredients, and providing well-balanced menus with a variety of courses such as appetizers, main dishes, and desserts.

The weighted mean of 4.73 with a standard deviation of 0.52 is verbally interpreted as Very Highly. This indicates that students demonstrate a strong mastery of menu planning and development, and the relatively low standard deviation reflects consistency in their competencies across respondents.

The findings further indicate that the students demonstrates an ability to integrate local ingredients into their menus while maintaining nutritional relevance in culinary education.

In summary, the results suggest that students in the TVL Cookery Strand possess excellent skills in designing, planning, and developing menus that are nutritionally sound, cost-effective, culturally appropriate, and professionally balanced, which reflects their readiness for both academic and real-world culinary tasks.

These competencies enable them to innovate traditional dishes while adhering to modern dietary standards. Consequently, their training prepares them for successful careers in diverse culinary environments.

Level of Student's Competencies in Culinary Education in terms of Knife Skills

Table 11 presents the level of students' competencies in Culinary Education specifically in Knife Skills.

The findings indicate that students strongly agreed that they are able to perform basic knife cuts such as julienne, brunoise, and chiffonade, understand the different types of kitchen knives and their specific uses, practice proper knife maintenance including honing and sharpening, ensure safe cutting practices to prevent accidents, and correctly portion ingredients essential for recipe execution.

Table 11. Level of Student's Competencies in Culinary Education in terms of Knife Skills

Statements	Mean	SD	Remarks
Learns basic knife cuts such as julienne, brunoise, and chiffonade as part of the fundamentals in food preparation.	4.78	0.43	Strongly Agree
Knows the different types of kitchen knives and their specific uses which can improve efficiency in cooking tasks.	4.73	0.50	Strongly Agree
Learns the knife maintenance, including honing and sharpening, is necessary to ensure clean and precise cuts.	4.80	0.43	Strongly Agree
Ensures safe cutting practices to prevent kitchen accidents and promote a secure working environment.	4.74	0.44	Strongly Agree
Understands how to portion meats, vegetables, and other ingredients is essential in recipe execution.	4.79	0.42	Strongly Agree
Weighted Mean	4.77		
SD	0.48		
Verbal Interpretation	Very Highly		

The weighted mean of 4.77 with a standard deviation of 0.48 is verbally interpreted as Very Highly Competent. This reflects that students have excellent knife handling abilities, and the relatively low standard deviation shows consistency in their skills across the respondents.

The passage highlights that students in the TVL-Cookery Strand exhibit excellent knife-handling abilities, supported by a low standard deviation which indicates consistent skill levels among the respondents. Their uniform proficiency suggests effective teaching methods in the cookery program. Moreover, the low variability in performance implies that the training emphasizes standardized techniques. This the program can confidently claim that its graduates possess reliable culinary skills.

In summary, the results suggest that students in the TVL Cookery Strand demonstrate strong proficiency in knife skills, combining safety, precision, efficiency, and technical

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knowledge, which are critical for professional culinary practice and effective execution of recipes. The findings imply that the curriculum effectively integrates practical knife techniques with safety awareness.

Table 12. Level of Student's Competencies in Culinary Education in terms of Recipe Execution

Statements	Mean	SD	Remarks
Measures ingredients precisely to help ensure consistency and quality in the final dish.	4.65	0.51	Strongly Agree
Prepares ingredients before cooking (mise en place) which contributes to a smoother cooking process.	4.74	0.48	Strongly Agree
Adjusts cooking time and temperatures which is necessary to achieve the desired food quality.	4.69	0.58	Strongly Agree
Selects appropriate tools and equipment to enhance the effectiveness of recipe execution.	4.63	0.56	Strongly Agree
Evaluates the taste, texture, and appearance of a dish to ensure that the recipe is successfully executed.	4.70	0.54	Strongly Agree
Weighted Mean	4.68		
SD	0.57		
Verbal Interpretation	Very Highly		

Table 12 presents the level of students' competencies in Culinary Education specifically in Recipe Execution. The findings indicate that students strongly agreed that they can measure ingredients precisely to ensure consistency and quality, prepare ingredients before cooking (mise en place) to facilitate a smoother cooking process, adjust cooking time and temperatures to achieve desired food quality, select appropriate tools and equipment to enhance recipe execution, and evaluate the taste, texture, and appearance of a dish to ensure successful outcomes.

The weighted mean of 4.68 with a standard deviation of 0.57 is verbally interpreted as Very Highly. This indicates that students demonstrate strong abilities in executing recipes accurately and effectively, while the low standard deviation shows consistency across the respondents.

In summary, the results suggest that TVL Cookery Strand students possess excellent recipe execution skills, combining precision, preparation, technical adaptability, and evaluative judgment to produce high-quality culinary outputs.

Level of Student's Competencies in Culinary Education in terms of Time Management

Table 13 presents the level of students' competencies in Culinary Education specifically in Time Management.

The findings indicate that students strongly agreed that they can organize tasks in a logical sequence to improve kitchen workflow and efficiency, prioritize cooking tasks to prevent delays during food service, allocate specific timeframes for each step in a recipe to enhance productivity, manage multiple tasks simultaneously to gain essential professional kitchen skills, and plan ahead to reduce stress and avoid last-minute errors in food preparation. The weighted mean of 4.51 with a standard deviation of 0.68 is verbally interpreted as Very Highly. This demonstrates that students consistently apply effective time management strategies, ensuring smooth workflow, productivity, and timely completion of culinary tasks.

Table 13. Level of Student's Competencies in Culinary Education in terms of Time Management

Statements	Mean	SD	Remarks
Organizes tasks in a logical sequence to improve kitchen workflow and efficiency	4.31	0.65	Strongly Agree
Prioritizes cooking tasks to help prevent delays during food service.	4.74	0.44	Strongly Agree
Allocates specific timeframes for each step in a recipe to enhance productivity.	4.49	0.67	Strongly Agree
Manages multiple tasks at once to gain the key skill in a professional kitchen setting.	4.40	0.72	Strongly Agree
Plans ahead to reduce stress and prevents last-minute errors in food preparation.	4.51	0.67	Strongly Agree
Weighted Mean	4.51		
SD	0.68		
Verbal Interpretation	Very Highly		

In summary, the results suggest that TVL Cookery Strand students exhibit strong time management skills, enabling them to coordinate multiple activities efficiently, prioritize tasks effectively, and maintain high standards of performance in a professional kitchen environment, thereby enhancing overall culinary productivity and quality of output.

Significant Relationship Between Student's Perspective on Challenges in TVL - Cookery Strand and Culinary Education

In this study, the significant relationship between student's perspective on challenges in TVL - Cookery strand and culinary education were analyzed applying Pearson Correlation Coefficient using Minitab 14.

Table 14. Significant Relationship between Student's Perspective on Challenges in TVL - Cookery Strand and Culinary Education

Student's Perspective on Challenges in TVL - Cookery Strand		menu planning and development	knife skills	recipe execution	time management
instructional challenge	Pearson Correlation	.420*	.469*	.479*	.471*
	Sig. (2-tailed)	.000	.000	.000	.000
	N	213	213	213	213
resource limitation	Pearson Correlation	.560*	.454*	.403*	.377*
	Sig. (2-tailed)	.000	.000	.000	.001
	N	213	213	213	213
healthcare safety consideration	Pearson Correlation	.459*	.495*	.501*	.481*
	Sig. (2-tailed)	.000	.000	.000	.000
	N	213	213	213	213
technology integration	Pearson Correlation	.603*	.553*	.563*	.659*
	Sig. (2-tailed)	.000	.000	.000	.000
	N	213	213	213	213
educational innovation	Pearson Correlation	.613*	.456*	.439*	.431*
	Sig. (2-tailed)	.000	.000	.000	.000
	N	213	213	213	213

Note * $p < .05$

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Table 14 presents the correlation between students' perspective on challenges in the TVL-Cookery strand and their competencies in culinary education. The results show Pearson correlation coefficients (r-values), p-values, and the sample size (N = 213) for each relationship.

A significant correlation exists between students' perspective on challenges in terms of instructional challenge, resource limitation, healthcare safety consideration, technology integration, and educational innovation with all aspects of culinary education, as supported by the obtained p-values being less than the 0.05 level of significance. This indicates that when teachers encounter fewer challenges, students tend to demonstrate higher competencies. Adequate resources, effective integration of technology, and the use of innovative teaching strategies enable teachers to facilitate the acquisition of essential culinary knowledge and skills, including menu planning and development, knife skills, recipe execution, and time management.

As Attia (2021) aimed to measure the awareness and knowledge of who are responsible for planning the food menus in the Egyptian resorts of the study samples regarding to the food menu procedures and the actual application of these procedures in order to reach the best recommendations and suggestions that can contribute to the improvement of working in the Egyptian resorts. In order to achieve this aim, two sources of evidence were used. Face-to-face semi-structured interviews were conducted with the responsible for planning food menus in the Egyptian resorts to identify the extent of their awareness and knowledge regarding the food menu procedures that are actually applied. On the other hand, personal observation checklist was used to ensure that procedures are correctly applied. Moreover, the results also recommended that increase the awareness and skills of the responsible for planning food menus through support training programs.

In summary, the results imply that minimizing challenges in instruction and resources not only supports teachers' effectiveness but also enhances students' overall competency in culinary education.

Significant Relationship Between Student's Potential in TVL - Cookery Strand and Culinary Education

In this study, the significant relationship between student's potential in TVL - Cookery strand and culinary education were analyzed applying Pearson Correlation Coefficient using Minitab 14.

Table 15 presents the correlation between students' potential in the TVL-Cookery strand and their competencies in culinary education.

Table 15 presents the correlation between students' potential in the TVL-Cookery strand and their competencies in culinary education. The results include Pearson correlation coefficients (R-values), p-values, and the sample size (N = 213) for each relationship.

A significant correlation exists between students' potential in terms of growing culinary opportunities, skills development, interest in entrepreneurial opportunities, and professional growth with all aspects of culinary education, as supported by the obtained p-values being less than the 0.05 level of significance. This indicates that students who perceive higher potential in the program tend to develop stronger competencies. Opportunities to grow culinary skills, enhance technical abilities, explore entrepreneurship, and prepare for professional advancement contribute to students' acquisition of essential culinary knowledge and skills, including menu planning and development, knife skills, recipe execution, and time management.

Table 15. Significant Relationship between Student's Potential in TVL - Cookery Strand and Culinary Education

Student's Potential in TVL - Cookery Strand		menu planning and development	knife skills	recipe execution	time management
growing culinary opportunities	Pearson Correlation	.350*	.213*	.564*	.190*
	Sig. (2-tailed)	.000	.011	.000	.022
	N	213	213	213	213
skills Development	Pearson Correlation	.210*	.380*	.216*	.296*
	Sig. (2-tailed)	.012	.000	.009	.000
	N	213	213	213	213
interest in entrepreneurial Opportunities	Pearson Correlation	.381*	.517*	.498*	.564*
	Sig. (2-tailed)	.000	.000	.000	.000
	N	213	213	213	213
professional growth	Pearson Correlation	.411*	.519*	.438*	.431*
	Sig. (2-tailed)	.000	.000	.000	.000
	N	213	213	213	213

Note * p < .05

In summary, the results imply that fostering students' potential in various aspects of the TVL-Cookery strand significantly enhances their competency, demonstrating that both motivation and opportunity play crucial roles in effective culinary education.

IV. Conclusion and Recommendations

A significant relationship between the student's perspective on challenges in Technology and Vocational Livelihood Cookery Strand is evident. Thus the hypothesis is rejected. This indicates that minimizing challenges in instructional delivery, resource availability, healthcare safety, technology integration, and educational innovation contributes to higher student competency in menu planning and development, knife skills, recipe execution, and time management.

Student potential in TVL-Cookery Strand shows a significant relationship on Culinary Education. Hence, the hypothesis is rejected. This means greater recognition of culinary opportunities, skills development, entrepreneurial interest, are associated with stronger competencies, enabling students to perform effectively in practical and professional culinary tasks.

Based on the findings and conclusions drawn from this study, the following recommendations are proposed:

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It is recommended that teachers and school administrators continue delivering clear and engaging instruction while integrating innovative teaching strategies and technology to enhance students' learning experiences. It is also suggested that classrooms and food laboratories be fully equipped with the necessary tools, materials, and safety equipment to support practical and hands-on learning. Furthermore, it is recommended that teachers be provided with regular professional development opportunities and updated teaching materials to maintain high-quality culinary instruction.

Students are encouraged to actively participate in hands-on activities, projects, and entrepreneurial opportunities to maximize skill development and professional growth. It is also suggested that they take advantage of exposure to real-world culinary practices, industry-based scenarios, and technology-enhanced learning to strengthen their technical competencies and career readiness.

It is recommended that schools expand partnerships with local food businesses, hotels, and culinary institutions to provide students with internships, apprenticeships, and industry exposure. The curriculum is also suggested to include more entrepreneurial learning opportunities, such as product development, market research, branding, and business planning. Continuous assessment of students' competencies and potential is recommended to identify areas for program improvement and ensure alignment with industry standards.

Future researchers are recommended to conduct longitudinal studies to track the development of students' competencies and potential over time. It is also suggested that they examine the effects of specific teaching strategies on students' performance and explore additional factors, such as motivation, peer influence, and parental support, that may affect learning outcomes and career readiness in TVL-Cookery programs.

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