

# INSTRUCTIONAL MODULE AS LEARNING MATERIAL IN FOOD PROCESSING

MYLA N. TODOC, LPT  
mylatodoc11@gmail.com  
Laguna State Polytechnic University, Philippines

## **ABSTRACT**

The purpose of this study is to develop and validate the instructional module as learning material in food processing in the subject area of Technology and Livelihood Education. This study sought answers to the following questions: 1. What is the level of the Instructional Module as Learning Material in Food Processing in terms of components in terms of the components with regards to: objectives, contents, activities, assessments and values? 2. What is the level of the Instructional Module as Learning Material in Food Processing in terms of characteristics as to: design, adaptability, appropriateness and authenticity? 3. What is the level of study' habits in terms of motivation, organization and punctuality? 4. What is the level of students Performance related to Quarterly Grades? 5. Do the instructional module as learning material in food processing in terms of Components and Characteristics has significant effect on students' study habits? 6. Do instructional module as learning material in food processing in terms of Components and Characteristics has significant effect on students' performance?

The respondents of the study will be eighty (80) Grade 8 students of Pedro Guevara Memorial National High School. The descriptive survey research method will be used in this study in order to assess the level of module components and characteristics in Technology and Livelihood Education under food processing production.

The following were the significant findings of the study; the level of module components with regards to learning objectives, contents, activities, assessments and values were all *very great extent*. The level of module characteristics with regards to design, adaptability, appropriateness, and authenticity were all *highly acceptable*. The level of study habits in terms of; motivation, organization and punctuality were all *very high*. The components of the module in terms of learning objectives, contents, activities, assessments and values have a significant effect on study habits while there is no significant effect in terms of quarterly grade.

The TLE teachers are encouraged to participate in seminars, workshops, and training programs to gain new knowledge and up-to-date background information on creating instructional learning materials. Additional instructional learning materials may be developed by the TLE teachers based on the needs and interests of the students assimilated into other courses offered in Technology and Livelihood Education.

## **Keywords:**

*Instructional module, learning objectives, content, activities, assessment, values, design, adaptability, appropriateness, and authenticity*

## **INTRODUCTION**

Educational institutions adapt and embrace the new normal, which is very uncertain and dynamic. As we are gradually bringing the old situation back, Department of Education always making sure to address all necessary things that can help teachers and students. There are challenges and difficulties in providing the necessity in school. Coping in an inevitable and continuous changes give hard times for teachers on how they will effectively impart knowledge to their learners.

Food processing is one of the areas in Technology and Livelihood Education subject. The scope and importance of food processing are vast, with variety of methods used to achieve different results. Food can be processed and preserved in many ways, including canning, freezing, dehydration, pickling, and irradiation. Food processing and preservation benefits include increased food safety, improved nutrition, longer shelf life, and increased economic opportunities. Processing also improves palatability and appearance.

A profound information and attainability of success in a field of cooking industry that will be a big help not only for learners but also for the community is the reason why the researcher decided to tweak and develop instructional module as learning material in food processing. Additionally, it can be used, particularly by the teachers at Pedro Guevara Memorial National High School, to help pupils stress fundamental learning characteristics designed to improve knowledge, values, abilities, and attitudes.

This study sought answers to the following questions:

1. What is the level of the Instructional Module as Learning Material in Food Processing in terms of the components with regards to:
  - 1.1 objectives;
  - 1.2 contents;
  - 1.3 activities;
  - 1.4 assessments and
  - 1.5 values?
2. What is the level of the Instructional Module as Learning Material in Food Processing in terms of Characteristics as to:
  - 2.1 Design;
  - 2.2 Adaptability;
  - 2.3 Appropriateness and;
  - 2.4 Authenticity?
3. What is the level of study' habits in terms of:
  - 3.1 motivation;
  - 3.2 organization; and
  - 3.3 punctuality?
4. What is the level of students performance related to Quarterly Grades?
5. Do instructional module as learning material food processing in terms of Components and Characteristics has significant effect on students' study habits?
6. Do instructional module as learning material in food processing in terms of Components and Characteristics has significant effect on students' performance?

## REVIEW OF RELATED LITERATURE

Study habit is buying out a dedicated scheduled and un-interrupted time to apply one's self to the task of learning. Without it, one does not grow and becomes self-limiting in life. Study habits tell a person that how much he will learn and how far he wants to go, and how much he wants to earn. These all could be decided with the help of one's study habits, throughout the life.

As stated in Skills you Need (2022) Getting yourself organized so that you can study effectively is an important first step in study skills. The information on this page may seem obvious to you but many people overlook the obvious and attempt to 'jump straight in' to study without planning and organizing appropriately. For your study time to be effective it is recommended that you find a suitable place to study. You should then make sure you have easy access to the tools and resources that you need to study.

William Shakespeare famously said, "Better three hours soon than a minute late". Thus implying that one would rather be early and wait than be late. The importance of punctuality, if taught to children at a young age, will help them in the long run. From self-confidence to better preparedness on the academic front, here are a few reasons why punctuality is important for children. The above literature are related with the present studies.

On the other hand, according to Ambayon (2020), the use of learning module is to let the students go through the lessons at their own pace. It is a substantial instructional material used in teaching-learning process that is suitable for distance learning. It contains lessons that are necessary in a particular subject, it follows the aligned course objectives, with various enrichment activities that are available in printed or digital format.

Module is defined as a set of studies or programs that follows a structure which was planned and organized to achieve certain number of objectives. Because its purpose is to identify clearer objectives of teachings and organize activities accordingly (Aziz, et al. 2017).

In addition, Briggs (2014), stated that every module must point to significant categories of content or conceptual pieces of the course which will guide students to discern big ideas. Relevance is necessary in providing a learning context on where students can express their comprehension on the course material. It will also help the students realize the value of the content of the learning module.

Tasmanian Institute of Learning & Teaching (2021), a learning module must contain learning activities that are aligned to the intended result, also to every module or sessions' specific learning outcome. The objective of each activity must be distinct to students and teachers. It is fairly necessary that every activity is significant, it guarantee the students' development and advancement past the unit. Meaningful activities engage students in active, constructive, intentional, authentic, and cooperative ways. Activities should build on previous activities and prevent being repetitive, they must allow students to engage with and develop their skills, knowledge and understandings in different ways. Useful learning activities are able to take what they have learnt from engaging with the activity and use it in another context, or for another purpose.

Furthermore, Baron et.al (2019), explained that there are two ways to evaluate student's learning, and those are summative and formative assessment. Formative assessment is used is applied in monitoring students' learning to impart ongoing responses which could be used by instructors or teachers to enhance their strategies in teaching and for students to improve their learning, however summative assessment is utilized to evaluate student's learning as the class ends, by comparing it against some standard or criterion.

## METHODOLOGY

In order to evaluate the degree of module components and characteristics in Technology and Livelihood Education under food processing production, the researcher was employed the descriptive survey method of research. It was carried out using a series of questionnaires for the food processing module's components and characteristics.

The researcher utilized a self-made questionnaire as an instrument to gather adequate data and information in this study. The researcher used one (1) set of questionnaire in this study. The questionnaire has two (2) parts wherein the first part has five (5) criteria to assess, and the second part has four (4) criteria to assess the components and characteristics of the module under food processing production.

## RESULT AND DISCUSSION

**Table 1. Extent of Appropriateness of the Components of the Develop Instructional Module as Learning Material in Food Processing in terms of Objectives**

| STATEMENT                                                                  | Mean                     | SD   | Remarks               |
|----------------------------------------------------------------------------|--------------------------|------|-----------------------|
| The objectives of the instructional module in food processing were...      |                          |      |                       |
| consistent and relevant to the course goal.                                | 4.63                     | 0.56 | Strongly Agree        |
| precisely describe the expected learning outcomes.                         | 4.44                     | 0.59 | Strongly Agree        |
| measurable and attainable.                                                 | 4.44                     | 0.59 | Strongly Agree        |
| consist of three learning areas which are knowledge, skills, and attitude. | 4.70                     | 0.46 | Strongly Agree        |
| stated in student-friendly language.                                       | 4.74                     | 0.52 | Strongly Agree        |
| <b>Grand Mean</b>                                                          | <b>4.59</b>              |      | <b>Strongly Agree</b> |
| <b>Interpretation</b>                                                      | <b>Very Great Extent</b> |      |                       |

Table 1 illustrates the extent of appropriateness of the components of the develop instructional module as learning material in food processing in terms of objectives. It can be gleaned that the respondents *strongly agree* that the objectives of the instructional module in food processing were stated in student-friendly language, it gained the highest ( $M=4.74$ ,  $SD=0.52$ ). Similarly, respondents *strongly agree* that objectives of the instructional module in food processing were precisely describe the expected learning outcomes and were measurable and attainable, it both received the least ( $M=4.44$ ,  $SD=0.59$ ).

Overall, extent of appropriateness of the components of the develop instructional module as learning material in food processing in terms of objectives attained the grand mean of 4.59 and was interpreted *Very Great Extent*.

It was supported by Torre Franca (2017) that module objectives could be perceived as the backbone of instruction upon completion of a course. Learning objective is a guide to ascertain and pick appropriate lesson content, activities, and assessment to achieve a more comprehensive learning progress. The value of creating learning modules lies in the ability to integrate related content and activities, providing a rich, interactive learning experience for students.

**Table 2. Extent of Appropriateness of the Components of the Develop Instructional Module as Learning Material in Food Processing in terms of Content**

| STATEMENT                                                           | Mean | SD   | Remarks        |
|---------------------------------------------------------------------|------|------|----------------|
| The contents of the instructional module in food processing were... |      |      |                |
| clear and precise in describing directions.                         | 4.70 | 0.46 | Strongly Agree |
| appropriate in the lessons.                                         | 4.60 | 0.54 | Strongly Agree |
| relevant to the student's level of understanding.                   | 4.53 | 0.57 | Strongly Agree |
| motivating learners to acquire skills.                              | 4.46 | 0.69 | Strongly Agree |

|                                                      |                          |      |                       |
|------------------------------------------------------|--------------------------|------|-----------------------|
| appropriate to gain essential learning competencies. | 4.60                     | 0.56 | Strongly Agree        |
| <b>Grand Mean</b>                                    | <b>4.58</b>              |      | <b>Strongly Agree</b> |
| <b>Interpretation</b>                                | <b>Very Great Extent</b> |      |                       |

Table 2 illustrates the extent of appropriateness of the components of the develop instructional module as learning material in food processing in terms of content. It can be gleaned that the respondents *strongly agree* that the content of the instructional module in food processing were clear and precise in describing directions, it gained the highest ( $M=4.70$ ,  $SD=0.46$ ). On the other hand, the statement “*motivating learners to acquire skills*” received the lowest mean score of respondents with ( $M=4.46$ ,  $SD=0.69$ ) yet was also remarked Strongly Agree.

Overall, extent of appropriateness of the components of the develop instructional module as learning material in food processing in terms of content attained the grand mean of 4.58 and was interpreted *Very Great Extent*.

According to Briggs (2014), every module must point to significant categories of content or conceptual pieces of the course which will guide students to discern big ideas. Relevance is necessary in providing a learning context. It will also help the students realize the value of the content of the learning module therefore, creating great content that will cater diverse learners takes a lot of creativity, time, and effort.

**Table 3. Extent of Appropriateness of the Components of the Develop Instructional Module as Learning Material in Food Processing in terms of Activities**

| STATEMENT                                                                                          | Mean                     | SD   | Remarks               |
|----------------------------------------------------------------------------------------------------|--------------------------|------|-----------------------|
| The activities of the instructional module in food processing...                                   |                          |      |                       |
| improved the student's sense of responsibility for their own learning.                             | 4.68                     | 0.55 | Strongly Agree        |
| used localized or alternative products, materials, and equipment available in the students' house. | 4.60                     | 0.54 | Strongly Agree        |
| were adequate for learners' interest.                                                              | 4.49                     | 0.55 | Strongly Agree        |
| contained application of knowledge and skills.                                                     | 4.66                     | 0.53 | Strongly Agree        |
| contained challenging activities that used creativity, intelligence, and ability.                  | 4.60                     | 0.56 | Strongly Agree        |
| <b>Grand Mean</b>                                                                                  | <b>4.61</b>              |      | <b>Strongly Agree</b> |
| <b>Interpretation</b>                                                                              | <b>Very Great Extent</b> |      |                       |

Table 3 illustrates the extent of appropriateness of the components of the develop instructional module as learning material in food processing in terms of activities. It can be gleaned that the respondents *strongly agree* that the activities of the instructional module in food processing were improved the student's sense of responsibility for their own learning, it gained the highest ( $M=4.68$ ,  $SD=0.55$ ). On the other hand, the statement “*were adequate for learners' interest*” received the lowest mean score of respondents with ( $M=4.49$ ,  $SD=0.55$ ) yet was also remarked Strongly Agree.

Overall, extent of appropriateness of the components of the develop instructional module as learning material in food processing in terms of activities attained the grand mean of 4.61 and was interpreted *Very Great Extent*.

It has been supported by Tasmanian Institute of Learning & Teaching (2021), that a learning module must contain learning activities that are aligned to the result of intended learning outcome. Meaningful activities engage students in active, constructive, intentional, authentic, and cooperative ways.

**Table 4. Extent of Appropriateness of the Components of the Develop Instructional Module as Learning Material in Food Processing in terms of Assessment**

| STATEMENT                                                                 | Mean                     | SD   | Remarks               |
|---------------------------------------------------------------------------|--------------------------|------|-----------------------|
| The assessment of the instructional module in food processing...          |                          |      |                       |
| provided a clear and specific instructions.                               | 4.79                     | 0.44 | Strongly Agree        |
| were applicable to achieve the learning objectives in the offered course. | 4.51                     | 0.55 | Strongly Agree        |
| provided evaluation that uses critical thinking skill.                    | 4.51                     | 0.60 | Strongly Agree        |
| provided performance tasks that develop their full potential.             | 4.61                     | 0.58 | Strongly Agree        |
| engaged students with different learning styles.                          | 4.65                     | 0.51 | Strongly Agree        |
| <b>Grand Mean</b>                                                         | <b>4.62</b>              |      | <b>Strongly Agree</b> |
| <b>Interpretation</b>                                                     | <b>Very Great Extent</b> |      |                       |

Table 4 illustrates the extent of appropriateness of the components of the develop instructional module as learning material in food processing in terms of assessment. It can be gleaned that the respondents *strongly agree* that the assessment of the instructional module in food processing were provided a clear and specific instructions, it gained the highest ( $M=4.79$ ,  $SD=0.44$ ).

Overall, extent of appropriateness of the components of the develop instructional module as learning material in food processing in terms of assessment attained the grand mean of 4.62 and was interpreted *Very Great Extent*.

As indicated by Kampen (2020), instructional materials must contain of significant assessment suitable for students to demonstrate their achievement of the module's learning outcomes. Assessment directly defines whether the learning objectives of the module are being met or not. It required the students to demonstrate their skills, knowledge, competencies, and use a range of higher-order thinking skills for the ultimate purpose of ensuring quality education. Teachers should take consideration in finding creative ways of delivering assessments and understanding to students' learning process, provide necessary feedback, and improve teaching approaches. Through assessment, teachers can easily classify the strength and weaknesses of the learners, provide necessary feedback, and improve teaching approaches.

**Table 5. Extent of Appropriateness of the Components of the Develop Instructional Module as Learning Material in Food Processing in terms of Value**

| STATEMENT                                                            | Mean                     | SD   | Remarks               |
|----------------------------------------------------------------------|--------------------------|------|-----------------------|
| The instructional module in food processing promoted...              |                          |      |                       |
| a necessary information that will be helpful in real life situation. | 4.79                     | 0.47 | Strongly Agree        |
| every student's learning style                                       | 4.59                     | 0.54 | Strongly Agree        |
| deeper understanding in learning                                     | 4.69                     | 0.49 | Strongly Agree        |
| easy to access in tangible skills                                    | 4.43                     | 0.73 | Strongly Agree        |
| students' ability to exercise their hidden skills                    | 4.63                     | 0.56 | Strongly Agree        |
| <b>Grand Mean</b>                                                    | <b>4.62</b>              |      | <b>Strongly Agree</b> |
| <b>Interpretation</b>                                                | <b>Very Great Extent</b> |      |                       |

Table 5 illustrates the extent of appropriateness of the components of the develop instructional module as learning material in food processing in terms of value. It can be gleaned that the respondents *strongly agree* that the value of the instructional module in food processing were promoted a necessary information that will be helpful in real life situation, it gained the highest ( $M=4.79$ ,  $SD=0.47$ ). On the other hand, the statement “*easy to access in tangible skills*” received the lowest mean score of respondents with ( $M=4.43$ ,  $SD=0.73$ ) yet was also remarked Strongly Agree.

Overall, extent of appropriateness of the components of the develop instructional module as learning material in food processing in terms of value attained the grand mean of 4.62 and was interpreted *Very Great Extent*.

#### Level of Acceptability of Module Characteristics

**Table 6. Level of Acceptability of Module Characteristics in terms of Design**

| STATEMENT                                                                                       | Mean                     | SD   | Remarks               |
|-------------------------------------------------------------------------------------------------|--------------------------|------|-----------------------|
| The instructional module in food processing...                                                  |                          |      |                       |
| had an appropriate text font, size and color.                                                   | 4.59                     | 0.61 | Strongly Agree        |
| used well defined language which was easy to understand.                                        | 4.61                     | 0.52 | Strongly Agree        |
| contained visuals that fit the level of interest, knowledge, and skills of the target learners. | 4.66                     | 0.59 | Strongly Agree        |
| was generally attractive and appealing to the eyes of the learners.                             | 4.53                     | 0.59 | Strongly Agree        |
| was well-organized and properly laid out.                                                       | 4.50                     | 0.66 | Strongly Agree        |
| <b>Grand Mean</b>                                                                               | <b>4.58</b>              |      | <b>Strongly Agree</b> |
| <b>Interpretation</b>                                                                           | <b>Highly Acceptable</b> |      |                       |

#### Level of Module Characteristics

In this study, the instructional module as learning material in food processing characteristics refer to the design, adaptability, appropriateness and authenticity. Presented in the table above was the level of module characteristics determined by the weighted mean and standard deviation.

#### Level of Module Characteristics in terms of Design

Table 6 illustrates the level of module characteristics in terms of design. Among the statements above, “*The instructional module in food processing contained visuals that fit the level of interest, knowledge, and skills of the target learners*” yielded the highest mean score ( $M=4.66$ ,  $SD=0.59$ ) and was remarked as Strongly Agree. On the other hand, the statement “*The instructional module in food processing was well-organized and properly laid out*” received the lowest mean score of respondents with ( $M=4.50$ ,  $SD=0.66$ ) yet was also remarked Strongly Agree.

It can be gleaned from table 6, that the level of Module Attributes in terms of design is 4.58 with “Highly Acceptable” as verbal interpretation.

It was supported by Paudyal (2016), that the correct choice of color, font and text size can prove to be vital for attracting the target audience. The font should be clean as possible. It shouldn't be too small and crummy. Using fonts that are easy to read are key to good presentation. This will have a positive outcome in engagement and retention of the subject matter.

According to Simui, et al. (2017), the design of the module should be user friendly because learning module cannot flow well if the language is difficult to understand.

**Table 7. Level of Acceptability of Module Characteristics in terms of Adaptability**

| STATEMENT                                      | Mean | SD   | Remarks        |
|------------------------------------------------|------|------|----------------|
| The instructional module in food processing... |      |      |                |
| can be changed to suit other purposes.         | 4.45 | 0.61 | Strongly Agree |
| catered diversity of learners.                 | 4.51 | 0.53 | Strongly Agree |

|                                                                     |                          |      |                       |
|---------------------------------------------------------------------|--------------------------|------|-----------------------|
| was versatile and can be modified across the curriculum.            | 4.45                     | 0.65 | Strongly Agree        |
| provided a variety of opportunities for independent learning.       | 4.64                     | 0.53 | Strongly Agree        |
| contained practical activities appropriate for exploratory courses. | 4.70                     | 0.49 | Strongly Agree        |
| <b>Grand Mean</b>                                                   | <b>4.55</b>              |      | <b>Strongly Agree</b> |
| <b>Interpretation</b>                                               | <b>Highly Acceptable</b> |      |                       |

Table 7 illustrates the level of module characteristics in terms of adaptability. Among the statements above, “*The instructional module in food processing contained practical activities appropriate for exploratory courses*” yielded the highest mean score ( $M=4.70$ ,  $SD=0.49$ ) and was remarked as Strongly Agree. *The instructional module in food processing can be changed to suit other purposes*” with the mean score ( $M=4.45$ ,  $SD=0.61$ ) and were also remarked as Strongly Agree. On the other hand, the statement “*The instructional module in food processing was versatile and can be modified across the curriculum*” received the lowest mean score of respondents with ( $M=4.45$ ,  $SD=0.65$ ) yet was also remarked Strongly Agree.

It can be gleaned from table 7, that the level of Module Characteristics in terms of adaptability is 4.55 with “Highly Acceptable” as verbal interpretation.

It was supported by Lucero and Petrocino (2017), that the ability to adapt to change is what makes self-learning module adaptable. It refers to the ability to adapt to new roles, responsibilities, materials, and schedules in general. It will be difficult to provide your students with the best possible learning experience if you are unable to accommodate for these different aspects of teaching, which is often the aim.

Leaders are motivated and cannot easily discourage if they can adapt to change (Doyle 2021). Adaptability arises as a necessity for facilitating the learning process through recognizing learning difficulties so that learners were able to internalize content effectively.

**Table 8. Level of Acceptability of Module Characteristics in terms of Appropriateness**

| STATEMENT                                                                                                     | Mean                     | SD   | Remarks               |
|---------------------------------------------------------------------------------------------------------------|--------------------------|------|-----------------------|
| The instructional module in food processing...                                                                |                          |      |                       |
| provided interesting learning activities based on the target learning objectives and outcomes in each lesson. | 4.80                     | 0.43 | Strongly Agree        |
| contained topics that are suitable for food processing production.                                            | 4.68                     | 0.50 | Strongly Agree        |
| associated lessons which were relevant in real-world context.                                                 | 4.74                     | 0.47 | Strongly Agree        |
| contained discussion that allowed students to think critically.                                               | 4.60                     | 0.56 | Strongly Agree        |
| assessed the level of knowledge, skills, and interest of the learners.                                        | 4.73                     | 0.50 | Strongly Agree        |
| <b>Grand Mean</b>                                                                                             | <b>4.71</b>              |      | <b>Strongly Agree</b> |
| <b>Interpretation</b>                                                                                         | <b>Highly Acceptable</b> |      |                       |

Table 8 illustrates the level of module characteristics in terms of appropriateness. Among the statements above, “*The instructional module in food processing provided interesting learning activities*

based on the target learning objectives and outcomes in each lesson” yielded the highest mean score ( $M=4.80$ ,  $SD=0.43$ ) and was remarked as Strongly Agree. On the other hand, the statement “*The instructional module in food processing contained discussion that allowed students to think critically*” received the lowest mean score of respondents with ( $M=4.60$ ,  $SD=0.56$ ) yet was also remarked Strongly Agree.

It can be gleaned from table 8, that the level of Module Characteristics in terms of appropriateness is 4.71 with “Highly Acceptable” as verbal interpretation.

It has been supported by Funa (2019), that educators at all levels utilize a variety of instructional materials such as textbooks, presentations and handouts to enhance the quality of their lessons. The quality of those materials directly impacts the quality of teaching and improve students’ knowledge, abilities, and skills, to monitor their assimilation of information. Materials must be appropriate on the subject matter and learners’ level of understanding. Therefore, such educational tools must be carefully planned, selected, organized, refined, and used in a course for maximum effect.

**Table 9. Level of Acceptability of Module Characteristics in terms of Authenticity**

| STATEMENT                                                    | Mean                     | SD   | Remarks               |
|--------------------------------------------------------------|--------------------------|------|-----------------------|
| The instructional module in food processing...               |                          |      |                       |
| provided unique set of activities                            | 4.80                     | 0.43 | Strongly Agree        |
| executed varieties of instructions                           | 4.68                     | 0.50 | Strongly Agree        |
| integrated assessment into real life scenarios               | 4.74                     | 0.47 | Strongly Agree        |
| allowed innovation through learning tasks                    | 4.60                     | 0.56 | Strongly Agree        |
| can assess the student’s ability efficiently and effectively | 4.73                     | 0.50 | Strongly Agree        |
| <b>Grand Mean</b>                                            | <b>4.71</b>              |      | <b>Strongly Agree</b> |
| <b>Interpretation</b>                                        | <b>Highly Acceptable</b> |      |                       |

Table 9 illustrates the level of module characteristics in terms of authenticity. Among the statements above, “*The instructional module in food processing provided unique set activities*” yielded the highest mean score ( $M=4.80$ ,  $SD=0.43$ ) and was remarked as Strongly Agree. On the other hand, the statement “*The instructional module in food processing allowed innovation through learning tasks*” received the lowest mean score of respondents with ( $M=4.60$ ,  $SD=0.56$ ) yet was also remarked Strongly Agree.

It can be gleaned from table 9, that the level of Module Characteristics in terms of authenticity is 4.71 with “Highly Acceptable” as verbal interpretation.

Herrington and Parker (2013) define authenticity by nine key elements, namely, authentic context, authentic task, presence of expert performances, multiple perspectives, collaboration, reflection, articulation, metacognitive support and authentic assessment.

According to the Swedish upper secondary curriculum (Skolverket, n.d.), the subject of technology should allow students to develop entrepreneurial skills, defined as supporting curiosity, confidence, creativity and courage, resulting in the ability to act, in innovation and problem solving. Beghetto and Kaufman’s (2014) view of creative learning includes, “having students identify a need and work collaboratively with each other and outside experts to develop a creative solution for that need will help them creatively and meaningfully use what they have learned in the classroom”. This kind of learning is related to the notion of authentic learning.

**Table 10. Level of Study’ Habits in terms of Motivation**

| STATEMENT                                                                       | Mean | SD   | Remarks        |
|---------------------------------------------------------------------------------|------|------|----------------|
| The students study habits towards utilizing module in food processing showed... |      |      |                |
| readiness in diverse activities to be accomplished                              | 4.76 | 0.46 | Strongly Agree |

|                                                             |                  |      |                       |
|-------------------------------------------------------------|------------------|------|-----------------------|
| eagerness in participating in class discussion              | 4.49             | 0.64 | Strongly Agree        |
| activeness in performing activities in class                | 4.58             | 0.57 | Strongly Agree        |
| dedication in accomplishing a task                          | 4.64             | 0.48 | Strongly Agree        |
| willingness in comprehending instructions for each activity | 4.64             | 0.51 | Strongly Agree        |
| <b>Grand Mean</b>                                           | <b>4.62</b>      |      | <b>Strongly Agree</b> |
| <b>Interpretation</b>                                       | <b>Very High</b> |      |                       |

Table 10 illustrates the level of study habits in terms of motivation. Among the statements above, “*The students study habits towards utilizing module in food processing showed readiness in diverse activities to be accomplished*” yielded the highest mean score ( $M=4.76$ ,  $SD=0.46$ ) and was remarked as Strongly Agree. On the other hand, the statement “*The students study habits towards utilizing module in food processing showed eagerness in participating in class discussion*” received the lowest mean score of respondents with ( $M=4.49$ ,  $SD=0.64$ ) yet was also remarked Strongly Agree.

It can be gleaned from table 10, that the level of study habits in terms of motivation is 4.62 with “Very High” as verbal interpretation.

According to University of Melbourne, motivation feels good, energizing, and drives us to get things done. But it doesn’t always come naturally, and we all face challenging or slow periods when motivation feels hard to come by. During these times, we can find it difficult to attend class, complete assignments, or study for exams. Many people fall into the trap of thinking that we need to feel “motivated enough” before doing something. Psychological research shows the converse - it’s action that leads to motivation, which in turn leads to more action. This means that at times, we need to start even if we don’t feel ready, trusting that motivation will follow, which will then enable us to take more action.

**Table 11. Level of Study’ Habits in terms of Organization**

| STATEMENT                                                                           | Mean             | SD   | Remarks               |
|-------------------------------------------------------------------------------------|------------------|------|-----------------------|
| The students study habits towards utilizing module in food processing showed...     |                  |      |                       |
| integration of diverse methods in performing                                        | 4.66             | 0.55 | Strongly Agree        |
| well-management of a tasks                                                          | 4.55             | 0.57 | Strongly Agree        |
| focused in seeking for techniques which can help for them to accomplish an activity | 4.64             | 0.56 | Strongly Agree        |
| establish self-improvement in every task taken                                      | 4.65             | 0.51 | Strongly Agree        |
| the best outcome                                                                    | 4.58             | 0.61 | Strongly Agree        |
| <b>Grand Mean</b>                                                                   | <b>4.62</b>      |      | <b>Strongly Agree</b> |
| <b>Interpretation</b>                                                               | <b>Very High</b> |      |                       |

Table 11 illustrates the level of study habits in terms of organization. Among the statements above, “*The students study habits towards utilizing module in food processing showed integration of diverse methods in performing well-management of a tasks*” yielded the highest mean score ( $M=4.66$ ,  $SD=0.55$ ) and was remarked as Strongly Agree. On the other hand, the statement “*The students study habits towards utilizing module in food processing showed well-management of a tasks*” received the lowest mean score of respondents with ( $M=4.55$ ,  $SD=0.57$ ) yet was also remarked Strongly Agree.

It can be gleaned from table 11, that the level of study habits in terms of organization is 4.62 with “Very High” as verbal interpretation.

As stated in Skills you Need (2022) Getting yourself organized so that you can study effectively is an important first step in study skills. The information on this page may seem obvious to you but many people overlook the obvious and attempt to ‘jump straight in’ to study without planning and organizing

appropriately. For your study time to be effective it is recommended that you find a suitable place to study. You should then make sure you have easy access to the tools and resources that you need to study.

**Table 12. Level of Study' Habits in terms of Punctuality**

| STATEMENT                                                                       | Mean             | SD   | Remarks               |
|---------------------------------------------------------------------------------|------------------|------|-----------------------|
| The students study habits towards utilizing module in food processing showed... |                  |      |                       |
| eagerness in accomplishing activities and assessment on time.                   | 4.74             | 0.44 | Strongly Agree        |
| abrupt response in every discussion and activities                              | 4.59             | 0.54 | Strongly Agree        |
| commitment in every task given                                                  | 4.50             | 0.62 | Strongly Agree        |
| effectiveness in performing well                                                | 4.59             | 0.54 | Strongly Agree        |
| discipline in showing activeness in completing a task given                     | 4.66             | 0.50 | Strongly Agree        |
| <b>Grand Mean</b>                                                               | <b>4.62</b>      |      | <b>Strongly Agree</b> |
| <b>Interpretation</b>                                                           | <b>Very High</b> |      |                       |

Table 12 illustrates the level of study habits in terms of punctuality. Among the statements above, *“The students study habits towards utilizing module in food processing showed eagerness in accomplishing activities and assessment on time”* yielded the highest mean score ( $M=4.74$ ,  $SD=0.44$ ) and was remarked as Strongly Agree. On the other hand, the statement *“The students study habits towards utilizing module in food processing showed commitment in every task given”* received the lowest mean score of respondents with ( $M=4.50$ ,  $SD=0.62$ ) yet was also remarked Strongly Agree.

It can be gleaned from table 12, that the level of study habits in terms of punctuality is 4.62 with “Very High” as verbal interpretation.

Based on Locus Assignment (2021) Punctuality is a habit of attending a task on time. In a wider sense, it's a habit of doing things at the right time. Punctuality is the key to get success in life. A punctual and disciplined student always gets respect and social acceptance in the school and society. They are admired by the parents and teachers.

A student who is punctual always gets success in his studies. In school time, punctuality ensures that you will arrive to class on time and so will not miss any part of the lesson. Punctuality during the school life will also help you to manage your working and personal life. Being punctual as a student, you'll find it easier to get done your work on time and thus get success in your career as well.

**Table 13. Level of Students Performance relative to Quarterly Grades**

| Grading Scale | Frequency    | Percentage            | Descriptors               |
|---------------|--------------|-----------------------|---------------------------|
| 90 – 100      | 36           | 45%                   | Outstanding               |
| 85 – 89       | 29           | 36%                   | Very Satisfactory         |
| 80 – 84       | 15           | 19%                   | Satisfactory              |
| 75 - 79       | 0            | 0                     | Fairly Satisfactory       |
| Below 74      | 0            | 0                     | Did Not Meet Expectations |
| <b>Mean</b>   | <b>88.61</b> | <b>Interpretation</b> | <b>Very Satisfactory</b>  |

Table 13 revealed the level of students' performance relative to their Quarterly grades. It can be seen that 36 or 45% of the students showed an "Outstanding" performance as they attained grades ranging from "90 to 100". While 29 or 36% of them performed "very satisfactorily" as they obtained grades ranging from "85 to 89" and 15 or 19% of them performed "satisfactorily" as they obtained grades ranging from "80 to 84". The mean grade of 88.61 with verbal interpretation of "Very Satisfactory" indicates that the respondents performed very well during the quarter.

### Significant Effect of the Instructional Module as Learning Material in Food Processing on Students' Study Habits

Minitab 14 was used in computing the data gathered and treated them statistically using Regression Analysis. The computed p-values were compared to the level of significance at 0.05 to determine the significant effect of the developed instructional module as learning material in food processing on students' study habits.

**Table 14. Significant Effect of the Developed Instructional Module as Learning Material in Food Processing on Students' Study Habits**

| Variables       |              | t-value | p-value | Analysis        |
|-----------------|--------------|---------|---------|-----------------|
| Objectives      | Motivation   | 2.30    | 0.024   | Significant     |
| Contents        |              | 2.87    | 0.005   | Significant     |
| Activities      |              | 4.04    | 0.000   | Significant     |
| Assessments     |              | 1.27    | 0.207   | Not Significant |
| Values          |              | 2.72    | 0.008   | Significant     |
| Design          | Motivation   | 4.69    | 0.000   | Significant     |
| Adaptability    |              | 5.06    | 0.000   | Significant     |
| Appropriateness |              | 1.58    | 0.118   | Not Significant |
| Authenticity    |              | 6.24    | 0.000   | Significant     |
| Objectives      | Organization | 3.03    | 0.003   | Significant     |
| Contents        |              | 3.60    | 0.001   | Significant     |
| Activities      |              | 5.69    | 0.000   | Significant     |
| Assessments     |              | 3.17    | 0.002   | Significant     |
| Values          |              | 3.74    | 0.000   | Significant     |
| Design          | Organization | 8.62    | 0.000   | Significant     |
| Adaptability    |              | 8.12    | 0.000   | Significant     |
| Appropriateness |              | 2.56    | 0.012   | Significant     |
| Authenticity    |              | 5.86    | 0.000   | Significant     |
| Objectives      | Punctuality  | 3.03    | 0.003   | Significant     |
| Contents        |              | 3.60    | 0.001   | Significant     |
| Activities      |              | 5.69    | 0.000   | Significant     |
| Assessments     |              | 3.17    | 0.002   | Significant     |
| Values          |              | 3.74    | 0.000   | Significant     |
| Design          | Punctuality  | 8.62    | 0.000   | Significant     |
| Adaptability    |              | 8.12    | 0.000   | Significant     |
| Appropriateness |              | 2.56    | 0.012   | Significant     |
| Authenticity    |              | 5.86    | 0.000   | Significant     |

\*significant at .05 level of significance

Table 14 presented the effect of instructional module as learning material in food processing on students' study habits.

It can be seen that the among the components of the instructional module, only assessment does not significantly affect students' study habits in terms of motivation. While among the characteristics, of the instructional module, only appropriateness does not significantly affect students' study habits in terms of motivation also. The obtained p-values ( $p=0.207, 0.118$ ) were all higher than (0.05) level of significance which supports the analysis.

On a different note, a significant analysis was revealed on the effect of developed instructional module components in terms of objectives, contents activities, assessments and values and its' attributes relative to design, adaptability, appropriateness and authenticity on students' study habits in terms of motivation, organization and punctuality. The obtained p-values which were all lower than (0.05) level of significance which supports the analysis.

This further indicates that, generally, the developed instructional module as learning material in food processing shows implication on students' study habits based on the evaluation of the respondents.

**Table 15. Significant Effect of the Instructional Module as Learning Material in Food Processing on Students' Performance**

| Variables       |                               | t-value | p-value | Analysis        |
|-----------------|-------------------------------|---------|---------|-----------------|
| Objectives      | 2 <sup>nd</sup> Quarter Grade | -0.78   | 0.439   | Not Significant |
| Contents        |                               | -0.55   | 0.587   | Not Significant |
| Activities      |                               | 0.25    | 0.801   | Not Significant |
| Assessments     |                               | -1.72   | 0.089   | Not Significant |
| Values          |                               | -0.66   | 0.509   | Not Significant |
| Design          | 2 <sup>nd</sup> Quarter Grade | -0.85   | 0.401   | Not Significant |
| Adaptability    |                               | -0.81   | 0.419   | Not Significant |
| Appropriateness |                               | -1.04   | 0.302   | Not Significant |
| Authenticity    |                               | 0.17    | 0.862   | Not Significant |

*\*significant at .05 level of significance*

Table 15 presented the effect of instructional module as learning material in food processing on students' performance.

It can be seen that all the components and characteristics of the instructional module does not significantly affect on students' performance. The obtained p-values ( $p=0.439, 0.587, 0.801, 0.089, 0.509, 0.401, 0.419, 0.302, 0.862$ ) were all higher than (0.05) level of significance which supports the analysis.

## Conclusions

Based on the findings above, the study has drawn the following conclusion:

1. Among the components of the instructional module in food processing, only assessment does not significantly affect students' study habits in terms of motivation. While among the characteristics, only appropriateness does not significantly affect students' study habits in terms of motivation as well.

2. Components and Characteristics of the instructional module in food processing does not significantly affect students' performance.

## Recommendations

Based on the conclusions formulated from the findings, the following recommendations are hereby formulated:

1. The TLE teachers may develop additional instructional learning materials based on the needs and interests of the students assimilated into other courses offered in Technology and Livelihood Education.
2. Students abilities and capabilities must be considered in planning and developing instructional material to fully anchored the learning to student's interests.
3. Future researchers can further validate the instructional module in food processing to measure and assess the effectiveness of the instructional tool.

## ACKNOWLEDGEMENTS

First and foremost, warmest thanks to the Almighty Father for his blessings and guidance to the researcher from the beginning up to the completion of the study. The author wishes to express her deepest appreciation and sincere gratitude to the following:

**Laguna State Polytechnic University Sta. Cruz Campus**, for providing quality education, proficient instructors, and a conducive learning environment which helped her to become a more competitive professional;

**HON. MARIO R. BRIONES, EdD**, University President and the chairman of the committee on Oral Examination, for his selfless dedication in promoting and giving quality education and professional growth;

**ENGR. MANUEL LUIS R. ALVAREZ**, the Campus Director, for his ending support for improving the school facilities for the convenient and benefits of all the researcher; of the LSPU;

**ROSARIO G. CATAPANG, PhD, Associate** Dean of College of Teacher Education, and technical expert for her tireless effort and utmost support in the fullness of the study;

**HENLY F. MARTIREZ, EdD**, her best thesis adviser, and her inspiration to make this study possible, for being so patient in teaching her, for the support and suggestions;

**JULIE ROSE P. MENDOZA, EdD**, GSAR Coordinator, for her accommodating attitude and unfailing support in the study;

**BENJAMIN O. ARJONA, EdD**, her Internal Statistician, for sharing his expertise and giving accurate result and interpretation of data for this study;

**JETHRO N. AUSTRIA, EdD**, her Subject Specialist, for his remarkable comments and observations for the betterment of the study;

**ARMIE P. DE LIMA**, her External Statistician, for her boundless patience and enthusiasm in bringing out accurate and detailed results for the credibility of the study;

**LEMUEL A. MAGALONA, EdD**, her Language Critic, for his tremendous effort in checking and editing to guarantee the correctness of the manuscript;

**EVELYN B. NAPIZA**, the campus registrar, for ensuring, organizing and administering her school records; and

Her **FAMILY** for their endless prayers, supports, love, and sacrifices to complete this research study successfully.

“The Researcher”

## REFERENCES

- Ambayon, C. (2020). Modular-Based Approach and Students' Achievement in Literature. *International Journal of Education and Literacy Studies*, Vol. 8 No. 3.

Aziz, N. N. B. A., & Mamat, N. (2017). Content criteria for the Module of Efficacy Enhancement in English Teaching for Preschool Teachers (MEET-PT) based on Bandura Self Efficacy Theory. *International Journal of Academic Research in Business and Social Sciences*, 7(12), 2222-6990.

Baron, Verma, V., Bansal, T., A., & Amresh, A. (2019). Emerging practices in game-based assessment. In *Game-based assessment revisited* (pp. 327-346). Springer, Cham.

Briggs, S. (2014). *How To Make Learning Relevant To Your Students (And Why It's Crucial To Their Success)*.

SkillsYouNeed (2022) *Getting Organised for Study*

Stevens, C. (2015) The seven habits of highly effective students Be Punctual—Punctuality applies to arriving in class on time. Teachers dislike interruptions because students.

Tasmanian Institute of Learning & Teaching Every learning activity in your unit should be intentional, meaningful and useful. (June 7, 2021).