DEVELOPMENT AND VALIDATION OF SELF-LEARNING MODULE IN HORTICULTURAL PRODUCTION

Gerlin P. Gallardo

Graduate School, Laguna State Polytechnic University, Santa Cruz, Laguna, Philippines

ABSTRACT

The development of a self-learning module is considered as an important educational goal to address the needs, and resources of every learner to ensure quality education. This study was conducted to Develop and validate self-learning module in Horticultural production for grade 9 utilizing the descriptive-evaluated method of research. Specifically, this study aimed to attain the following objectives: 1. Determine the level of appropriateness of developed self-learning module in Horticultural production in terms of its components such as: objectives, content, discussion, activities, and assessment. 2. Determine the level of Validity of developed self-learning module in Horticultural production in terms of: suitability, relevance, and aesthetic value. 3. Find out the significant difference on the level of appropriateness of developed self-learning module in Horticultural production made by the TLE master teachers and TLE teachers.4. Find out the significant difference on the level of validity of developed self-learning module in Horticultural production made by the TLE master teachers and TLE teachers.

The level of appropriateness of developed self-learning module in Horticultural production in terms of its components such as objectives, content, discussion, activities, and assessment as rated by TLE teachers and TLE master teachers were very high. While the level of validity in terms of suitability, relevance, and aesthetic value, as rated by TLE teachers were Very Highly validated and only Highly validated as rated by TLE master teachers.

There is a significant difference on the level of appropriateness and validity of developed self-learning module as rate by the TLE master teachers and TLE teachers. This means that the groups of respondents have different evaluation on the developed of the self-learning module in Horticultural Production, therefore the hypothesis stating that there is no significant difference on the level of appropriateness and validity of developed self-learning module in Horticultural production was not sustained.

It is highly recommended that the developed and validated self-learning module be used as instructional materials in teaching grade 9 students as well as be used for the improvement of learning strategies as in modular modality.

KEYWORDS:*Instructional Module, Horticultural Production, Objectives, Contents, Discussions, Activities, Assessments, Suitability, Relevance and Aesthetic value.*

I.   INTRODUCTION

Education is very important in everyone's life thus, learning in Horticulture Production is very relevant in man's daily life. Some students have no knowledge, skills, and ideas about Horticulture because of many reasons. In line with this, teachers who facilitate learning should prepare and apply different strategies and techniques, to help students understand the lessons especially in Horticulture production. Developing a self-learning module is a great effort a teacher could do in supporting students' learning.

Horticulture is an unfamiliar term to many students. Yet, when they are told that caring for houseplants, growing tomatoes in a garden, and mowing the lawn are horticultural activities, the term suddenly becomes much clearer. Horticulture is a segment of the agriculture industry. Horticulture includes the production and use of plants for food, comfort, and beautification.

The self-learning module and other alternative learning delivery modalities are in place to address the needs, situation, and resources of every learner to help the Department of education ensure that all the learners have access to quality basic education with face-to-face classes still prohibited due to the public health protocol because of the Corona Virus.

Quality education is viewed as a nation's pillar of success. It means quality employment for a better life. The implementation of K-12 curriculum in the Philippines Basic Educational System is the key to a nation's development. Though the government faces many problems in the long run of the implementation of the program, there is a need to implement it because the enhancement of the quality of education is very urgent and critical. Through the K-12 program, students will be able to get sufficient instructional time to do subject-related tasks which make them more prepared and well-trained in that subject area. It is in this context that the researcher got interested to conduct a study on the development and validation of self-learning module in Horticultural production. The researcher believes that the use of modules in teaching will facilitate the learning process. Hence it makes teaching more effective. Moreover, using module the students would benefit to have a better grasp of the lesson presented to them.

The researcher aims to provide opportunities for teachers and students to have equal footing with 21st century teachers and learners in TLE Cluster   Division of Laguna. The developed learning module is used as the tool for the study targets to improve or enhance the teaching in TLE as well as the learner's knowledge, skills, and ideas in Horticultural production. Also, this will be an additional material to be used by the teachers for future learners.

Espinar et.al. (2016) states that, the lesson objectives are content validity, and the objectives followed the principle of SMART and should be relevant to the course topics, the lesson inputs section has content validity, and the lesson present clearly the key concepts and the background information needed to understand the lesson similarly, the lesson application of the work text possesses content validity. The activities and exercise in this section are relevant and in consonance with the course syllabus. All activities are adequate, sufficient, and appropriate to its users.

According to Jesse Hines, (2013), the ability to write clearly is crucial to getting the message across no matter what he is writing, whether it is an email, a blog post, a magazine, article, or a letter to a friend. Clear and concise writing is vital to having one's words read and understood. The whole purpose of most writing is to inform readers of something or to persuade people to do something. The more cleared and concise language, the easier the message will be understood, and the more likely the readers will respond to that message.

According to Morrison (2019) self-paced learning methods are also called individualized learning or self-instruction and has received the most attention in instructional design. As the principles of learning indicate, much evidence supports the belief that optimum learning takes place when a student works at his or her own pace, is actively involved in performing specific learning tasks, and experiences success in learning. He also added the necessary features of high-quality self-paced learning program such as learning activities are carefully designed to address specific objectives, activities and resources are carefully selected in terms of the required instructional objectives.

Stelzer, Et.al. (2010) state that activities before lecture and allowing time devoted to active learning aimed a modest increase in examination performance, the change dramatically improved student attitudes toward the course in general and lecture in particularly.

Fisher (2017) narrates that, student assessment is a critical aspect of the teaching and learning process. The measurement of student learning through assessment is important because it provides useful feedback to both instructors and students about extent to which students are successfully meeting course learning objectives. Forms and purposes of assessment

II. OBJECTIVES

This study aimed to Develop and Validate of self-learning module in Horticultural production in Junior High School in TLE Cluster of Laguna, Division of Laguna, School Year 2020-2021.

Developing knowledge and skills was focused on the Philippine Educational Curriculum. It had long been targeted by schools and teachers throughout the country. But the development of equally important, creative thinking skills was given less priority.

Specifically, this study aimed to attain the following objectives:

1. Determine the level of appropriateness of developed self-learning module in Horticultural production in terms of its components such as:

      1.1. objectives;

      1.2. content;

      1.3. discussion;

      1.4. activities; and

      1.5. assessment.

2. Determine the level of validity of developed self-learning module in Horticultural production in terms of:

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2.1. suitability;

2.2. relevance; and

2.3. aesthetic value.

3. Find out the significant difference on the level of appropriateness of developed self-learning module in Horticultural production made by the TLE master teachers and TLE teachers.

4. Find out the significant difference on the level of validity of developed self-learning module in Horticultural production made by the TLE master teachers and TLE teachers.

III.   METHODOLOGY

Since the study was about the developed and validation of self-learning module in Horticultural production ten (10) TLE master teachers and twenty (20) TLE teachers from Junior High School in TLE Cluster of Laguna, Division of Laguna will be the respondents of the study. They were considered as evaluators of the study since they are knowledgeable, and they handled subject in TLE especially in Agriculture where Horticultural production is anchored.

This study utilized the purposive sampling technique. The researcher made contact of the potential respondents for the participation to this survey research. There were two (2) groups of respondents who serve as evaluators of the developed and validated self-learning module in Horticultural production.

Descriptive research according to Rick Penwarden (2014) is conclusive in nature, as opposed to exploratory. This means that descriptive research gathers quantifiable information that can be used for statistical inference on the target audience through data analysis. As consequence this type of research takes the form of closed-ended questions, which limits its ability to provide unique insights. However, if used properly it can help an organization better define and measure the significance of something about a group of respondents and the population they represent.

In this study development and validation of self-learning module in Horticultural production was developed by the researcher to aid students learning and acquiring skills in producing horticultural plants. The level of developed and validated of self-learning module in Horticultural production was determined by the weighted mean and standard deviation as well as described in terms of its components such as objectives, content, discussion, activities, and assessment.

It also used Minitab 14 in computing the data gathered and treated them statistically using Paired t-test. The computed p-values were compared to the level of significance at 0.05 to determine the significant difference among the ratings given by the group of respondents on the level of appropriateness of the develop self-learning module in Horticultural production.

IV.   RESULT AND DISCUSSION

This Chapter consists of the presentation, interpretation, and analysis of data. This also consists of different tables showing appropriateness and validity of the developed self-learning module in Horticultural production.

Level of appropriateness of the Developed Self-Learning Module in Horticultural Production

In this study, a self-Learning module in Horticultural production was developed by the researcher to aid students in learning and acquiring skills in producing horticultural plants. The level of appropriateness of the developed self-learning module in Horticultural production was determined by the weighted mean and standard deviation and described in terms of its components such as objectives, content, discussion, activities, and assessment.

Level of appropriateness of the Developed Self-Learning Module in Horticultural Production in terms of Objectives

The result shows that in terms of objectives, TLE teachers evaluated the level of appropriateness of the developed self-learning module in Horticultural production as *very high* shown by the grand (M=4.81, SD=0.42). This means that the objectives of the self-learning module in Horticultural production were very highly developed as perceived by the respondents.

Table 1. Level of appropriateness of the Developed Self-Learning Module in Horticultural Production in terms of Objectives

STATEMENT	TLE Teachers			TLE Master Teachers		
The Objectives of the module….	Mean	SD	Remarks	Mean	SD	Remarks
1. are clearly stated on what is expected of the learner.	4.80	0.40	VSA	4.00	0.73	SA
2. show clearly plan of the course content and training learning activities comprehensively.	4.70	0.46	VSA	3.70	0.75	SA
3. are measurable and attainable.	4.80	0.51	VSA	3.80	0.79	SA
4. guide the students to have a full grasp of the concepts to be discussed in each of the module.	4.70	0.56	VSA	4.00	0.77	SA
5. has topic that are practically related to each other.	4.90	0.30	VSA	3.60	1.04	SA
6. are feasible, workable, and attainable with the time frame for the course.	4.85	0.36	VSA	4.10	0.74	SA
7. provide learning task and videos that relates directly to the objectives.	4.70	0.46	VSA	3.60	0.99	SA
8. are aligned with the K-12 Learning Competencies	4.90	0.30	VSA	3.90	0.80	SA
9. focus on the development of critical and analytical thinking of the learner.	4.80	0.40	VSA	3.90	0.79	SA
10. contains discussion that are needed for better understanding of activities.	4.90	0.30	VSA	3.90	0.80	SA
Grand Mean/SD	**4.81**	**0.42**	**VSA**	**3.85**	**0.84**	**SA**
Interpretation	**Very High**			**High**		

Legend:

Scale	Range	Remarks	Interpretation
5	4.20 – 5.00	Very Strongly Agree (VSA)	Very High
4	3.40 – 4.19	Strongly Agree (SA)	High
3	2.60 – 3.39	Agree (A)	Moderately High
2	1.80 – 2.59	Slightly Agree (SlA)	Low
1	1.0 – 1.79	Disagree (D)	Very Low

However, TLE master teachers perceived, that the objectives of the self-learning module in Horticultural production were highly shown by the grand (M=3.85, SD=0.84). This means that the objectives of the self-learning module in Horticultural production were highly developed.

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Table 2. Level of appropriateness of the Developed Self-Learning Module in Horticultural Production in terms of Contents

STATEMENT	TLE Teachers			TLE Master Teachers		
The Module Content…	Mean	SD	Remarks	Mean	SD	Remarks
1. allow equal opportunities among all Horticulture Students.	4.55	0.59	VSA	3.70	0.83	SA
2. provide clear and precise directions with descriptive direction.	4.55	0.67	VSA	3.60	0.80	SA
3. are made interesting with the use of additional selected image displays	4.50	0.59	VSA	3.80	0.83	SA
4. are appropriate in the lessons discussed.	4.55	0.59	VSA	3.70	0.83	SA
5. compare method and techniques to meet the horticulture skills requirements.	4.55	0.59	VSA	3.80	0.85	SA
6. provide learning task and videos that relates directly to the contents.	4.60	0.58	VSA	3.70	0.85	SA
7. motivate learners to acquire skills in Horticulture.	4.65	0.57	VSA	3.60	1.04	SA
8. focusses on the main goal which is the development of skills in Horticulture.	4.65	0.57	VSA	3.60	1.04	SA
Grand Mean/SD	**4.58**	**0.60**	**VSA**	**3.69**	**0.89**	**SA**
Interpretation	Very High			High		

The result shows that in terms of contents, TLE teachers evaluated the level of appropriateness of the developed self-learning module in Horticultural production was *very high* shown by the grand (M=4.58, SD=0.60). This means that the contents of the self-learning module in Horticultural production were very highly developed as perceived by the respondents.

However, TLE master teachers perceived, that contents of self-learning module in Horticultural production was *high* shown by the grand (M=3.69, SD=0.89). This means that the contents of the self-learning module in Horticultural production were highly developed.

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Table 3. Level of appropriateness of the Developed Self-Learning Module in Horticultural Production in terms of Discussion

STATEMENT	TLE Teachers			TLE Master Teachers		
The Module Discussion…	Mean	SD	Remarks	Mean	SD	Remarks
1. Are in sequence needed in development of skills.	4.55	0.59	VSA	3.70	0.80	SA
2. Uses appropriate words that are helpful to comprehend the topics.	4.55	0.59	VSA	3.80	0.83	SA
3. Motivates students to use the acquired knowledge and skill.	4.60	0.58	VSA	3.60	0.92	SA
4. Uses pictures and illustrations for better understanding of the lessons.	4.60	0.58	VSA	3.50	0.77	SA
5. Contains discussion that are allow students to think critically, thus encouraging original and independent thinking.	4.55	0.59	VSA	3.70	0.80	SA
Grand Mean/SD	**4.57**	**0.59**	**VSA**	**3.66**	**0.83**	**SA**
Interpretation	**Very High**			**High**		

The result shows that in terms of discussion, TLE teachers evaluated the level of appropriateness of the developed self-learning module in Horticultural production as *very high* as shown by the grand (M=4.57, SD=0.59). This means that the discussion of the self-learning module in Horticultural production was very highly developed as perceived by the respondents.

However, TLE master teachers perceived, that the discussion of the self-learning module in Horticultural production was *high,* shown by the grand (M=3.66, SD=0.83). This means that the discussion of the self-learning module in Horticultural production was highly developed.

Table 4. Level of appropriateness of the Developed Self-Learning Module in Horticultural Production in terms of Activities

STATEMENT	TLE Teachers			TLE Master Teachers		
The Activities of the module….	Mean	SD	Remarks	Mean	SD	Remarks
1. Has topics in the module are appealing.	4.65	0.48	VSA	3.90	0.77	SA
2. Are information provided is relevant and up to-date.	4.70	0.46	VSA	3.70	0.93	SA
3. Is adequate in acquiring the knowledge in each module.	4.75	0.43	VSA	3.90	0.78	SA
4. Are relevant to the concepts being developed in each module.	4.70	0.46	VSA	3.80	0.83	SA
5. Contain application of knowledge and skills	4.70	0.46	VSA	3.80	0.83	SA
6. Uses appropriate guide and practice and monitoring activities that are adequate for learner interest.	4.70	0.46	VSA	4.00	0.79	SA
7. Contains challenging activities that used creativity, intelligence, and ability.	4.65	0.48	VSA	3.80	0.83	SA
Grand Mean/SD	**4.70**	**0.46**	**VSA**	**3.84**	**0.82**	**SA**
Interpretation	**Very High**			**High**		

The result shows that in terms of activities, TLE teachers evaluated the level of appropriateness of the developed self-learning module in Horticultural production as *very high* shown by the grand (M=4.70, SD=0.46). This means that the activities of the self-learning module in Horticultural production were very highly developed as perceived by the respondents.

However, TLE master teachers perceived, that activities of self-learning module in Horticultural production was *high,* shown by the grand (M=3.84, SD=0.82). This means that the activities of the self-learning module in Horticultural production were highly developed.

Table 5. Level of appropriateness of the Developed Self-Learning Module in Horticultural Production in terms of Assessment

STATEMENT	TLE Teachers			TLE Master Teachers		
The Module Assessment…	Mean	SD	Remarks	Mean	SD	Remarks
1. provide pre-test and post-test and self-check for learner evaluation.	4.70	0.46	VSA	3.90	0.79	SA
2. contained evaluation suited to the learners.	4.80	0.40	VSA	3.80	0.84	SA
3. provide evaluation that uses critical thinking skill.	4.85	0.36	VSA	3.80	0.84	SA
4. assess learning task that develop directly to target competency.	4.80	0.40	VSA	3.80	0.84	SA
5. *provide answer key to facilitate assessment evaluation.*	4.75	0.43	VSA	3.70	0.81	SA
Grand Mean/SD	**4.78**	**0.41**	**VSA**	**3.80**	**0.83**	**SA**
Interpretation	**Very High**			**High**		

The result shows that in terms of assessment, TLE teachers evaluated the level of appropriateness of the developed self-learning module in Horticultural production as *very high* as shown by the grand (M=4.78, SD=0.41). This means that the assessment of the self-learning module in Horticultural production were very highly developed as perceived by the respondents.

However, TLE master teachers perceived, that assessment of self-learning module in Horticultural production were *high as* shown by the grand (M=3.80, SD=0.83). This means that the assessment of the self-learning module in Horticultural production were highly developed.

Level of Validity of Developed Self-Learning Module in Horticultural Production

The level of validity of self-learning module in Horticultural production was determined by the weighted mean and standard deviation was described in terms of suitability, relevance, and aesthetic value.

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Table 6. Level of Validity of the Developed Self-Learning Module in Horticultural Production in terms of Suitability

STATEMENT	TLE Teachers			TLE Master Teachers		
The Module Suitability…	Mean	SD	Remarks	Mean	SD	Remarks
1. are text versatile and can be used across curriculum.	4.80	0.40	VSA	3.70	0.81	SA
2. provide learning activities that are suited to the various learning style.	4.70	0.46	VSA	3.60	0.77	SA
3. can be revised to fit for some other purposes.	4.70	0.46	VSA	3.90	0.70	SA
4. content and discussion are suited to learner adequacy.	4.75	0.43	VSA	3.80	0.83	SA
5. contain discussion that allow students to think critically.	4.65	0.48	VSA	3.80	0.83	SA
Grand Mean/SD	**4.72**	**0.45**	**VSA**	**3.76**	**0.79**	**SA**
Interpretation	Very High			High		

The result shows that in terms of suitability, TLE teachers evaluated the level of validity of self-learning module in Horticultural Production was found to be very high as show by the grand (M=4.72, Sd=0.45). This means that the suitability of the self-learning module in Horticultural production were very highly validated as perceived by the respondents.

However, TLE Master teachers perceived, that suitability of self-learning module in Horticultural production were *high as* shown by the grand (M=3.76, SD=0.79). This means that the level of validity of self-learning module in Horticultural production in terms of suitability were highly validated.

Table 7. Level of Validity of the Developed Self-Learning Module in Horticultural Production in terms of Relevance

STATEMENT	TLE Teachers			TLE Master Teachers		
The Module Relevance…	Mean	SD	Remarks	Mean	SD	Remarks
1. provide learning task that relates directly to the objectives of the lessons.	4.85	0.36	VSA	3.60	1.01	SA
2. activities and performance tasks are relevant to the objectives of the modules.	4.75	0.43	VSA	3.90	0.78	SA
3. focuses on important lessons that develop skills in Horticulture.	4.65	0.57	VSA	3.80	0.81	SA
4. are suited and fitted to the field of specialization.	4.60	0.66	VSA	4.00	0.79	SA
5. interesting and self-motivating to the learners.	4.75	0.43	VSA	3.90	0.78	SA
Grand Mean/SD	**4.72**	**0.51**	**VSA**	**3.84**	**0.84**	**SA**
Interpretation	Very High			High		

The result shows that in terms of relevance, TLE teachers evaluated the level of validity of self-learning module in Horticultural production is *very high* as shown by the grand (M=4.72, SD=0.51). This means that the relevance of the self-learning module in Horticultural production were very highly validated as perceived by the respondents.

However, TLE master teachers perceived, that the relevance of self-learning module in Horticultural production was *high* as shown by the grand (M=3.84, SD=0.84). This means that the level of validity of self-learning module in Horticultural production in terms of relevance were highly validated.

Table 8. Level of Validity of Self-Learning Module in Horticultural Production in terms of Aesthetic Value

STATEMENT	TLE Teachers			TLE Master Teachers		
The Module Aesthetic Value…	Mean	SD	Remarks	Mean	SD	Remarks
1. contents are type legible and free from alteration.	4.55	0.67	VSA	3.50	0.99	SA
2. use appropriate text font, size, and type.	4.80	0.40	VSA	3.80	0.83	SA
3. contains visuals that fit the level of interest, knowledge, and skills of the target learners.	4.75	0.43	VSA	3.80	0.77	SA
4. uses well define language which are easy to understand.	4.70	0.46	VSA	3.70	0.79	SA
5. illustrations contribute to the acquisitions of concepts, understanding and skills in Horticulture.	4.75	0.43	VSA	3.60	0.91	SA
Grand Mean/SD	**4.71**	**0.50**	**VSA**	**3.68**	**0.86**	**SA**
Interpretation	**Very High**			**High**		

The result shows that in terms of aesthetic value, TLE teachers evaluated the level of validity of self-learning module in Horticultural production is *very high* as shown by the grand (M=4.71, SD=0.50). This means that the aesthetic value of the self-learning module in Horticultural production were very highly validated as perceived by the respondents.

However, TLE master teachers perceived, that the aesthetic value of self-learning module in Horticultural production were *high* as shown by the grand (M=3.68, SD=0.86). This means that the level of validity of self-learning module in Horticultural production in terms of aesthetic value were highly validated.

Significant difference on the level of appropriateness of the develop Self-Learning Module in Horticultural Production.

Minitab 14 was used in computing the data gathered and treated them statistically using Paired t-test. The computed p-values were compared to the level of significance at 0.05 to determine the significant difference among the ratings given by the group of respondents on the level of appropriateness of the developed self-learning module in Horticultural production.

Table 9. Significant difference on the level of appropriateness of the Developed Self-Learning Module in Horticultural Production made by the TLE Master Teachers and TLE Teachers

Variables	t-value	p-value	Decision on H_o	Interpretation
Objectives	3.57	0.005		Significant
Content	2.97	0.011	Reject	Significant
Discussion	2.99	0.010	Reject Reject	Significant
Activities	2.85	0.016	Reject Reject	Significant
Assessment	3.39	0.007		Significant

Significant at .05 level of significance

Table 9 reveals the significant difference on the level of appropriate of the developed self-learning module made by the TLE master teachers and TLE teachers in terms of objectives, content, discussion, activities, and assessment.

Table 10. Significant difference on the level of validity of Self-Learning Module in Horticultural Production made by the TLE Master Teachers and TLE Teachers

Variables	t-value	p-value	Decision on H_o	Interpretation
Suitability	3.63	0.004	Reject	Significant
Relevance	2.84	0.016	Reject	Significant
Aesthetic Value	3.46	0.005	Reject	Significant

Significant at .05 level of significance

Table 10 reveals the significant difference on the level of validity self-learning module made by the TLE master teachers and TLE teachers in terms of suitability, relevance, and aesthetic value.

V.   CONCLUSION

The level of appropriateness of developed self-learning module in Horticultural production in terms of its components such as objectives, content, discussion, activities, and assessment as rated by TLE teachers and TLE master teachers were very high. While the level of validity in terms of suitability, relevance, and aesthetic value, as rated by TLE teachers were very highly validated and only highly validated as rated by TLE master teachers.

There is a significant difference in the level of appropriateness and validity of the developed self-learning module as rate by the TLE master teachers and TLE teachers. This means that the groups of respondents have a different evaluation on the development of the self-learning module in Horticultural production, therefore the hypothesis stating that there is no significant difference on the level of appropriateness and validity of developed self-learning module in Horticultural production was not sustained.

RECOMMENDATION

In the view of the findings and conclusions of the study, the following recommendations may be done.

It is highly recommended that the developed and validated self-learning module be used as instructional materials in teaching grade 9 students as well as used for the improvement of learning strategies as in modular modality.

The module is ready for use as evaluated by the respondents though minimal modifications were suggested.

To test the effectiveness of the module, it should be used by an experimental group and then compare the result of the post-test to the control group who will not use it.

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