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Level of Competency and Needs of Technology and Livelihood Education Teachers: Basis for Developing Teachers' Enhancement Program

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Abstract : This descriptive study was conducted to assess the level of competency and the needs of Technology and Livelihood Education teachers which will serve as basis for developing teachers' enhancement program. The basis of the conceptual framework evolved from the concept Organization-Task-Person (OTP) conception of needs assessment as described by McGehee and They to provide information about where and when training is needed in an organization. It is considered the core framework for needs assessment in the academic literature since most of the models developed have been based on the three-level framework (Holton, E. et al. 2000). This study covered the total population of 76 or 100% of the Technology and Livelihood Education teachers and school administrators from the secondary level in the First Congressional District of Pangasinan for the School Year 2023-2024. Percentage, mean/average, t-test, f-test, and analysis of variance (ANOVA) were used as statistical tools to quantify the data. It utilized the survey form through the use of questionnaire designed by the researcher for the purpose of the study. The instrument was validated by a group of experts. Their corrections, comments, and suggestions were considered in improving the questionnaire. The findings of the study show that there is no significant difference on the competency level when the teachers are grouped according to demographic profile. Findings also imply that there are significant differences identified in all the six components of standard competency and the competency level of the teachers. Three major needs identified are activities that would enhance competency of learners in motivation and opportunities to acquire or enhance their skills, renewed professionalism, and rejuvenated teaching advocacy and calling. The study concludes that there exists a significant gap (difference) between the present competency level and the desired standard competency requirements of TLE teaching among the teachers. This study, thereby, recommends enhancement program, projects, and activities to address the competency needs requirement of the TLE teachers. The findings, conclusions, and recommendations of this study can be used as a basis for policy formulation on teachers' development/enhancement programs.

Keywords: needs, competency and Technology and Livelihood teachers

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INTRODUCTION

A teacher's role in the present time involves more than simply standing in front of a group of students, sharing his thoughts on what he finds meaningful. Teaching is one of the most complicated jobs today. Teaching the subject Technology and Livelihood Education (TLE) is even more challenging. It demands broad knowledge of the four components (Agri-Fishery, Computer and Entrepreneurship, Industrial Arts, and Home Economics) of the subject matter, curriculum and standards, enthusiasm, a caring attitude, creativity, love for learning, classroom management techniques, and a desire to make a difference in the lives of young people (Great Schools, n.d.).The need to ensure the presence of highly qualified teachers in every classroom and to determine how best to define and prepare these qualified teachers has been an old age issue. One could be the best teacher with the best course materials, course activities, learning outcomes, and assessments at one point in time. But as time changes, courses are revised as in the case of TLE to suit the needs of the society, the employers, and the diversity of students; hence teachers, must keep abreast of these changes. A way to

find out what needs to be changed, improved or updated is to evaluate the actual state of the teachers' knowledge, attitudes, skills, and strong aspects of their practice, as well as their weaknesses (Stronge & Tucker, 2003).

The issuance of Department Order No. 43 in 2002, popularly known as BEC Order, restructured the elementary and secondary curriculum for the purpose of improving the standard of education in the country. The Guidelines for the Pilot Implementation of the 2002 Secondary Education Curriculum (DepEd Order No.43 series of 2002) describes *Teknolohiya at Edukasyong Pantahanan at Pangkabuhayan* (TEPP) as one of the four component subjects of *Makabayan*, a learning area that serves as a practice environment for holistic learning to develop a healthy personal and national self-identity, designed to develop the personal, social, and work/spatial of learners especially interpersonal skills, empathy with the culture, vocational efficiency, problem solving, and decision making in daily life.TLE (per DepEd Order No. 37 series of 2003) is one of the learning areas of the Secondary Education Curriculum in Philippine secondary schools. As a subject, its component areas are: Home Economics, Agri-Fishery Arts, Industrial Arts, and Information and Communication Technology. It is also referred to as CP-TLE for Career Pathways in Technology and Livelihood Education. .

Having set the goals of TLE, what would the standard qualifications of a teacher that would best impart the curriculum contents of TLE? These qualifications are often referred to as competencies and are defined in general or specific terms.

Competency, in general, is defined as a set of knowledge, skills, behaviors, attitudes, and characteristics that distinguishes one person from another. While personal competencies refer to individual attitudes and skills required to handle professional relationships and facilitate learning and personal development (e.g., communication), functional competencies relate to technical knowledge or skills required by a particular field or profession (e.g., accounting principles).In a study conducted by WONG Yu Fai (1996), he opted the definition of the concept of competence offered by the European Tuning project as competencies represent a dynamic combination of knowledge, understanding, skills, abilities, and values.

A competency-based training system includes more than just training courses related to job performance. It identifies the level of competence required for different levels of performance within a given work function. Looking at the competencies required for different job levels would allow employees to set professional development goals. Developing competency-based training requires performing a job skills analysis. Every job description must be examined to determine the knowledge and skills required to perform the job and the level of competence required to perform the job. Once competencies are defined, training can be organized to support performance at different levels - from entry-level to upper management.

Executive orders, department orders, and memoranda on TLE as a subject taught in high school; its history; legal basis; objectives; components; and programs were briefly summarized to appreciate and better understand the subject and purpose of the current study. Definitions of competency, in general and as applicable to the academic environment, were reviewed from various sources. Minimal materials were found on teaching competency skills requirements specific of a TLE teacher; nevertheless, literatures related to generic teaching competency were found. A number of articles talk about scales to measure competency.

Studies conducted in the past on TLE teaching competencies were very limited. A local study focusing on TLE teaching was conducted by Retome et al. (2012) on attitudes of TLE teachers towards work and the students' personal view on the subject; while Guiner (2013) determined teachers' competency in terms of knowledge, skills, and attitudes for the purpose of developing a training module in Industrial Arts for TLE faculty in Region I.

The study assessed the suitability of existing TLE teachers in teaching the subject. It, likewise, described the level of competencies in teaching TLE in terms of six teaching competencies. Moreover, the author determined specific focus areas for inclusion in the enhancement program for TLE teachers.

Statement of the Problem

The study sought to determine the competency level and the needs of Technology and Livelihood Education (TLE) teachers in the First Congressional District of Schools Division Office I Pangasinan during the school year 2023-2024.

Specifically, it sought to answer the following sub-problems:

1. What is the demographic profile of Technology and Livelihood Education (TLE) teachers and administrators?
2. What is the competency level of TLE teachers as perceived by the teachers themselves and their department heads in terms of:
   - 2.1 Personal and professional competence,
   - 2.2 Competence in using knowledge of student skills and talents,
   - 2.3 Competence in using teaching techniques,
   - 2.4 Competence in monitoring and evaluation skills,
   - 2.5 Competence in establishing relations with family and society, and
   - 2.6 Competence in using knowledge of curriculum and content?
3. Is there a significant difference in competency level of TLE teachers when they are grouped according to demographic profile?
4. Is there a significant difference between the competency level of the TLE teachers as assessed by themselves and the administrators?
5. What are the standard teaching competency requirements of TLE teachers?
6. What are the gaps between the present competencies of TLE teachers and the standard teaching competencies?
7. What are the competency needs of TLE teachers?
8. What teachers' enhancement program could be proposed to address the needs of the TLE teachers?

METHODOLOGY

This chapter presents the research design, sources of data, instrumentation and data collection and the tools for data analysis.

Research Design

The study utilized the descriptive research design. Descriptive research involves gathering data that describe events and then organizes, tabulates, depicts, and describes the data collection (Glass & Hopkins, 2004). It often uses visual aids such as graphs and charts to aid the reader in understanding the data distribution. Because the human mind cannot extract the full import of a large mass of raw data, descriptive statistics is very important in reducing the data to manageable form. When in-depth, narrative descriptions of small number of cases are involved. Researchers use description as a tool to organize data into patterns that emerge during analysis. Those patterns aid the mind in comprehending a qualitative study and its implications (Knupfer & McLellan, 2001).

Descriptive research holds a valuable place within education because in contrast to laboratory experiments, the human nature of educational research is critical to the result. Educational environments and experiences inherently contain many extraneous variables that cannot be controlled in a realistic situation which often call for careful observation of specific life situations, and can require the collection of data from a large number of people spread throughout a wide geographic region. The descriptive component is critical to educational research because educational events cannot be reduced to a controlled laboratory environment. The types of questions generated in educational research require descriptions that help to explain the data and direct emergent prescriptions for educational events.

This method was used in the study to gather, organize, analyze, and present the level of competency of TLE teachers. Gap analysis was used to determine the gaps between the competencies of TLE teachers and the acceptable competency levels.

Sources of Data

A complete enumeration of all TLE teachers from public high schools and administrators in the First Congressional District of Schools Division Office I Pangasinan during the school year 2023-2024 served as respondents of the study. The population was composed of 5 administrators and 76 teachers, 19 males and 57 females.

Tools for Data Analysis

To derive valid and accurate results, appropriate statistical tools were employed.

1. **Percentage (%).** This was used to describe the demographic profile of TLE teachers in problem 1 and the distribution of teachers under specified competency categories in problem 2.
2. **Mean/Average.** This was used to provide a description of the collective assessment of the respondents of the study. The mean competency scores are presented by demographic profile in problem 2 and according to the six competency components in problem 4.
3. **T-test** for two independent samples. This was used to answer problem 3 by testing the first hypothesis regarding the differences between gender and competency level. It was also used to answer problem 5 by determining the existence of significant difference between the rating of the teachers and the administrators as stated in the second hypothesis.
4. **T-test** for one sample population. This was used to answer problem 8 by testing the third hypothesis on the differences between the present competency scores of TLE teachers and the standard competency score requirement.
5. **F-test or ANOVA.** F-test was used to answer part of problem 3 by testing the first hypotheses on the differences among existing competency when the teachers were grouped according to age, undergraduate courses, teaching experience, and seminars/training attended.

RESULTS AND DISCUSSION

This chapter deals with the presentation, analysis and interpretation of the data gathered relative to sub-problems in the study.

Demographic Profile of TLE Teachers and Administrators

Table 1. Profile of the Teacher - respondents according to Gender and Age

Gender/Age	Number of Teachers	Percentage
Gender		
Male	19	25%
Female	57	75%
Age (years)		
20-30	21	27.60%
31-40	31	40.80%
41-50	18	23.70%
51-60	6	7.90%

Table 1 shows that 57 or 75% of the TLE teacher-respondents are female and 19 or 25% are male. According to age, 21 or 27.60% are 20 to 30 years old, 31 or 40.80% are 31 to 40 years old, 18 or 23.70% are 41 to 50 years old, and 6 or 7.90% are 51 to 60 years old. The youngest TLE teacher is 23 years old and the oldest is 58 years old.

The data reveals that majority of the TLE teachers are mostly female. It also shows that most of the respondents are 31 to 40 years old.

Table 2. Profile of the Respondents according to Undergraduate Degree/ Major of TLE Teachers

Undergraduate Degree/Major	Number of Teachers	Percentage
Computer-Related Courses	14	18.40%
BSIT - Computer Education	6	
BSIT - Electronics	2	
BSE - Computer Education	1	

BS Computer Science		2	
BS Math - Computer		1	
BSOA - Computer Education		1	
BS Computer Education		1	
Home Economics		28	36.80%
BSIE – Home Economics		19	
BSTLE – Home Economics		1	
BSIE – Garments Trade		3	
BSIE – Girls Trade		2	
BSIE – Food Technology		3	
Industrial Arts		16	21.10%
BSIE –Industrial Arts		13	
Mechanical Technology		1	
Civil Engineering Technology		2	
Agri-Business		7	9.20%
Agri-Fishery		4	
Animal Husbandry		1	
Agriculture Education		1	
Agribusiness Management		1	
Business Related Courses	7		9.20%
Entrepreneurship		1	
Management		2	
Office Administration		1	
Marketing Management		1	
Distributive Arts		2	
Others	4		5.30%
BSE – English		1	
Nutrition		1	
Hotel and Restaurant Management		2	

The table shows that most of the teachers, 28 or 36.80%, are majors of Home Economics, followed by 16 or 21.10% who are graduates of Industrial Arts, and then by 14 or 18.40% who are computer-related graduates. The least numbers of TLE teachers, 7 or 9.20%, have Agri-business education; and another, 7 or 9.20%, have business-related courses. Four or 5.30% are graduates of other courses like BSE English, Hotel Management, and Nutrition.

Based from the above data, 5.30% of teachers who are teaching TLE subject are graduates of other courses and 9.20% are graduates of business-related courses. This results to lack of pedagogical skills, as well as of adequate knowledge of the subject matter they teach (Figueredo, V. and Anzalone S. 2003).

Table 3. Profile of the Respondents according to Years of Teaching Experience of TLE Teachers

Teaching Experience	Number of Teachers	Percentage
0 -5	34	45%
6-10	20	26%
11-15	9	12%
16-20	8	11%
21-25	3	4%
26-30	1	1%
31-35	1	1%
Total	76	100%

The table shows that 34 or 45% of the TLE teachers have 0 to 5 years of teaching experience, 20 or 26% have 6 to 10 years of teaching experience, 9 or 12% have 11 to 15 years of teaching experience, 8 or 11% have 16 to 20 years of teaching experience, and 3 or 4% have 21 to 25 years of teaching experience. One teacher has 26 to 30 years of teaching experience and another one has 31 to 25 years of teaching experience.

The data shows that majority of the TLE teachers have six years or less teaching experience. A detailed inspection of the data gathered indicates that the teaching experiences of the teachers are spent on teaching the TLE subject.

Table 4. Profile of the Respondents according to Attendance to Seminars of TLE Teachers

Attendance to Seminars (hours)	Number of Teachers	Percentage
None	37	48.68%
1 - 5	27	35.53%
6 - 10	9	11.84%
11 - 15	2	2.63%
16 – 20	1	1.32%
Total	76	100%

The table shows that most of the TLE teachers, 37 or 48.68% have not attended any seminar/training, 27 or 35.53% have attended 1 to 5 hours of seminar/ training, and 9 or 11.84% have attended 11 to 15 hours of seminar/training. Two (2) teachers have attended 11 to 15 hours of seminar/training, and one teacher has attended 16 to 20 hours of seminar/training.

The distribution reflects the lack of motivation of TLE teachers to attend seminars. Based on personal observations and experiences of the author of the current study, possible explanations on the lack of motivation to attend seminars/ training is the DepEd policy of giving credit for promotion on seminars attended with 3 days or more duration. Most of the teachers are not willing or do not have the time and money to attend seminars/training or they are not given opportunity to attend by their superiors because there are only limited slots for different schools.

Table 5. Profile of Administrators according to Sex, Age, Undergraduate Degree/Major, Years as Administrator, Years as a Teacher, and Years as TLE Teacher

Sex	Age	Undergraduate Degree/Major	Years as Administrator	Years as Teacher	Years as TLE Teachers
M	41	BSIE/Industrial Arts	6	16	10
M	41	BSIE/Architecture	7	16	11
F	40	BSE/Mathematics	6	17	None
F	42	BSIE/Home Economics	5	16	16
F	55	BSA/Agronomy	13	20	NA

Table 5 shows that out of the five administrators, two are males and three are females. In terms of age, one is 40 years old, two are 41 years old, one is 42 years old, and one is 55 years old. All the administrators are 40 years or older. According to undergraduate degree, three of the administrators completed BS Industrial Engineering, one completed BS Education, and one completed BS Agronomy. All of them have been administrators for 6 years or more, where in one has been for 13 years, the longest so far. All of the administrators have more than 16 years of teaching experience, in which 10 years or more is spent on teaching TLE subject, except for one who has not taught TLE in her 17 years of teaching experience.

Table 6. Competency Level according to Years of Teaching Experience

Teaching Experience (years)	Competency Score	
	Numerical	Descriptive
0 – 10	2.66	Intermediate
6 – 10	2.92	Intermediate
11 – 15	2.80	Intermediate
16 – 20	2.69	Intermediate
21 – 25	3.27	Intermediate
26 – 30	3.37	Intermediate
31 – 35	3.37	Intermediate
Over-all mean	3.01	Intermediate

It can be observed in Table 6 that the competency scores are within the range of intermediate competency; however, the numerical score generally increases as teaching experience increases. Teachers with the highest competency score of 3.37 are those with more than 25 years of teaching experience and the lowest at 2.66 are those with less than 5 years of experience.

The data shows that the distribution is an indication that experience in teaching results to a gain in competency skills.

Table 7. Competency Level according to Undergraduate Degree/major

Undergraduate Degree/Major	Competency Score	
	Numerical	Descriptive
Computer-Related Courses BSIT - Computer Education BSIT - Electronics BSE - Computer Education BS Computer Science BS Math - Computer BSOA - Computer Education BS Computer Education	2.76	Intermediate
Home Economics BSIE – Home Economics BSTLE – Home Economics BSIE – Garments Trade BSIE – Girls Trade BSIE – Food Technology	2.93	Intermediate
Industrial Arts BSIE –Industrial Arts Mechanical Technology Civil Engineering Technology	2.79	Intermediate
Agri-Business Agri-Fishery Animal Husbandry Agriculture Education Agribusiness Management	2.73	Intermediate
Business-Related Courses Entrepreneurship Management Office Administration Marketing Management Distributive Arts	2.44	Limited
Others BSE – English Nutrition Hotel and Restaurant Management	2.66	Intermediate
Over-all mean	2.82	Intermediate

In terms of undergraduate degree completed, shown in Table 7, the highest competency score is the Home Economics Majors at 2.93, followed by the Industrial Arts graduates at 2.79, and then by the graduates of Computer Related Courses at 2.76, which all mean intermediate competency. The lowest is the graduates of Business-Related Courses, at 2.44, which implies limited competency.

The data reveal that the teachers who have business related-courses have limited competency.

Table 8. Competency Level according to Seminars Attended

Attendance to Seminars (hours)	Competency Score	
	Numerical	Descriptive
None	2.92	Intermediate
1 – 5	2.70	Intermediate
6 – 10	2.64	Intermediate
11 – 15	3.12	Intermediate
16 – 20	3.12	Intermediate
Over-all Mean	2.68	Intermediate

The competency level of TLE teachers, when grouped according to number of hours of seminar attended, is highest among those who have attended more than 15 hours of seminar/training, at 3.12, followed by teachers who have not attended any seminar/training, at 2.92.

Competency level of TLE teachers, in terms of the six areas of competency

2.1 As Assessed by the Teachers Themselves

The competency scores of the teachers are presented in terms of the Key Skill Requirements (KSR) in the six components of the Standard Competency for TLE teachers in two ways: 1) by number of teachers and percentage on three groupings of numerical competency scores, and 2) by mean of the numerical response of the teachers on the assessment form. The competency scores are grouped into three ranges: numerical score of 1.00 to 2.50 to include scores of 1 (Basic competency) and 2 (Limited competency),

numerical score of 2.51 to 3.50 to include scores of 3 (Intermediate competency), and numerical score of 3.51 to 5.00 to include scores of 4 (Advanced competency) and 5 (Expert competency).

The groupings are based on the previous result of Problem 2 that the teachers' mean competency is 2.82 (Intermediate) and on the normal distribution, as justified by the Central Limit Theorem and the Law of Large Numbers, which states that the distribution of the sum (or average) of a large number (more than 25 is considered large sample) of independent, identically distributed variables will be approximately normal, regardless of the underlying distribution (Engineering Statistics Handbook). The scores as assessed by the teachers are presented in this section while the scores as assessed by the administrators are presented in the next section.

Table 9. Frequency and Percentage of Teachers by Competency Score in Component I: Personal and Professional Competency

Competency Skill Requirement	1.00-2,50	Percentage	2.51-3.50	Percentage	3.51-5.00	Percentage
1. Conduct of researches to improve learning-teaching process	15	20%	46	60%	15	20%
2. Conduct of regular self – assessment	31	41%	32	42%	13	17%
3. Preparation of papers for presentation in technical conferences/symposia	16	21%	41	54%	19	25%
4. Use of tools for critical assessment	28	37%	36	47%	12	16%

As shown in Table 9, almost half of the TLE teachers assessed themselves with intermediate competency (2.51-3.50) in all the four areas under component 1: 61% on conduct of researches, 42% on conduct of regular self-assessment, 54% on preparation of papers for presentation, and 47% on use of tools for critical assessment. At most, 25% of the teachers assessed themselves as having advanced competency or expert competency (3.51-5.00): 19% on conduct of researches, 17% on conduct of regular self-assessment, 25% on preparation of papers for presentation, and 16% on use of tools for critical assessment. A big percentage of the teachers assessed themselves as having limited competency or basic competency (1.00–2.50): 20% on conduct of researches, 41% on conduct of regular self-assessment, 21% on preparation of papers for presentation, and 37% on use of tools for critical assessment.

Table 10. Numerical and Descriptive Mean Competency Score in Component I: Personal and Professional Competency

Competency Skill Requirement	Competency Assessment Score	
	Numerical	Descriptive
1. Conduct of researches to improve learning-teaching process	3.01	Intermediate
2. Conduct of regular self –assessment	2.63	Intermediate
3. Preparation of papers for presentation in technical conferences/symposia	3.00	Intermediate
4. Use of tools for critical assessment	2.64	Intermediate
Over-all mean	2.82	Intermediate

Table 10 shows the mean numerical competency scores of the TLE teachers in each of the key areas under component 1. The highest competency score is on the conduct of researches to improve learning-teaching process at 3.01, followed by on preparation of technical papers for presentation in technical conferences/ symposia at 3.00, on use of tools for critical assessment at 2.74, and last, on conduct of regular assessment at 2.73. The over-all mean competency is 2.82 which means intermediate competency.

The data shows that the low scores on the conduct of regular assessment and on use of critical tools emphasize the need to motivate teachers to learn and use such tools.

Recommendations

Based on the conclusions drawn from the findings of the study, the following enhancement programs were recommended.

1. Programs/projects/activities to make the teachers closer to the community. Programs to include tapping resources and personalities from the industry, government agencies, and non-government organizations.
2. Development of an effective Observation Process for both administrators and teachers to include not only the criteria for rating of existing competencies but also feedback mechanism and observer-teacher conferencing strategies for the improvement of the teachers' teaching competency. The process should be able to identify excellent and low performing teachers. It should also include a monitoring scheme to determine improvements along areas that need improvement for low performing teachers.

1. Mandatory monthly retooling activities on topics like:
    1. Conduct of research,
    2. Preparation of paper for presentation,

3. Construction of test instruments,
4. Alternative testing methods, and
5. Non-traditional assessment tools.

2. Moral and value recovery programs to remind the teachers on the advocacies of teaching and to rekindle their interest for self-improvement for the benefit of the students and the community.

3. An evaluation of the assessment tool used in this study is, likewise, recommended. It is suggested that teacher evaluation be conducted by peers, students, and administrators.

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