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Difficulties Encountered by Vocational Students in the Online-Learning Modality

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Dr. He Yu
STI West Negros University/ DepEd-Bacolod, Philippines
https://orcid.org/0009-0006-5407-4680 | 2311681489@qq.com

Dr. Maria Teresa T. Asistido
STI West Negros University, Bacolod City, Philippines
https://orcid.org/0000-0001-9687-5634 | Teresa.asistido@wnu.sti.edu.ph

Mylene A. Bautista
STI West Negros University, Bacolod City, Philippines
https://orcid.org/0009-0003-6801-8215 | mylene.bautista@wnu.sti.edu

Abstract:

This study investigates the challenges faced by vocational students in online learning at Beijing Vocational College of Economics and Technology, Langfang, Hebei Province, China, focusing on research design for mathematical methods. The study comprises 50 graduates from the Internet School of Beijing Vocational College of Economics and Technology. Employing a descriptive and comparative analysis approach, data processing involves frequency, percentage, mean, and the Mann-Whitney U-test, facilitated by SPSS software. Results illustrate the gender distribution, parental education levels, and average monthly income of the 50 students. Predominantly, male students outnumber female counterparts. Additionally, most students have parents with lower education (primary and secondary degrees), while a minority have parents with higher education (university and master's degrees). Concerning average household income, data indicate an equal split, with 50% earning below 47709.94 PHP monthly and the remaining 50% earning above this threshold. Teachers encounter a low degree of difficulty in online teaching, while vocational learners experience a similarly low degree of difficulty in teacher learning assessment. Comparisons regarding online teaching difficulty among vocational learners, based on gender and parental education level, reveal non-significant results for gender but significant results for parental education level and average family income. Likewise, comparisons regarding the difficulty vocational learners encounter in online learning for teacher learning assessment, based on gender and parental education level, yield non-significant results for gender, parental education level, and average household income.

Keywords: Education, vocational students, online learning modality, Teacher's Instructional Delivery, Teacher's Assessment of Learning.

Introduction:

Nature of Problem

China prioritizes students' educational attainment with a compulsory 12-year program, including nine years of mandatory schooling. Despite ongoing reform attempts, the system remains heavily exam-oriented, sparking debate. While exams offer opportunities for high achievers and promote some social equity, they often stifle creativity and essential skill development among students.

Through vocational education, students may showcase their strengths in a particular subject, get additional professional knowledge, and grow into leaders in fields that benefit the nation, society, and individual students. The education sector should enhance vocational education within the present educational framework.

In China, many schools have actively implemented the industry and education integration program, forming several significant scientific research achievements. Guangdong Vocational and Technical College has achieved the goal of building an ownership Industrial College jointly by schools and enterprises to accurately train craftsmen (Zheng, 2019). Zhejiang Police Vocational College has realized the practice and exploration of digital security industry education integration in higher vocational colleges. However, some unknown difficulties in implementing vocational education in some areas still need a lot of resources and time to solve.

Current State of Knowledge

Strengthening quality education is conducive to cultivating students' perfect personalities and enhancing students' spiritual realm. Unfortunately, however, higher vocational colleges and universities have not paid attention to improving students' overall quality of education. Many things could be improved in implementing quality education (Wang, 2019).

According to Zhao (2022), higher vocational education plays a unique and crucial role in putting China's plan of reviving the nation via science and education and fortifying it with talent into reality. Education is an essential component of higher education in the nation. Compared with general education, the professional characteristics of vocational education are becoming increasingly prominent. The teaching content of general education focuses on knowledge, theory, and scholarship, while vocational education has significant vocational characteristics. At the same time, the teaching purpose of vocational education is what, that is, what the trainees will do in the future" and "how to do it."

It also focuses on technology and application, cultivating talents engaged in specific positions with the necessary scientific and technological knowledge, humanistic knowledge, and corresponding professional knowledge. It is carried out precisely in the industrial development chain with the participation of colleges, industries, communities, and enterprises, carrying out the "vocational polishing" of students in related majors. In vocational education, it is necessary to ensure the connection between vocational and technical classrooms and production, professional settings, and career development, reflecting the "vocational."

The so-called militarized management is to cultivate students' consciousness with the relevant discipline of the army and cultivate the style of students with the discipline of soldiers to continuously guide and supervise students to maintain better study habits and then maintain and develop a better study style and school spirit in colleges and universities.

After the military management process of the school, college students can have better professional and cultural knowledge and have excellent prospects in the case of their own hardships and hard work, prohibitions, and related personal styles, which can also allow them to develop better in different interview processes, get more opportunities and challenge opportunistic.

Shdaifat, S. a. K., Shdaifat, N. a. K., & Khateeb, L. A. (2020), explore the challenges and opportunities of vocational education and training (VET) during the COVID-19 pandemic, including the transition to online learning. It examines the perspectives of vocational education stakeholders, including students, teachers, and administrators, shedding light on the difficulties encountered and strategies employed to address them.

Smith and Johnson (2021) also investigate the challenges of online learning faced by vocational education students in the United States. It examines issues such as access to technology, internet connectivity, digital literacy, and engagement. The study also explores the perspectives of teachers and administrators on how to support students in overcoming these challenges.

Theoretical Underpinnings

This study was anchored to David Perkins's (2007) Theory of Difficulty. Most educational researchers, school administrators, and experienced teachers develop theories of difficulty. For a given area of education, an established theory of difficulty pinpoints the typical issue spots for learners. It provides some causal understanding of why they happen to improve teaching and learning. The literature on learning and development offers numerous ways of understanding conceptual difficulties and recognizing problems of ritualized knowledge, inert knowledge, knowledge too foreign for learners to engage it readily, and tacit knowledge, the partly unconscious nature of which poses learning challenges. A robust theory of difficulty has led to improved learning in several studies. Teachers' responses to recurrent problems need to be revised in everyday teaching. One not uncommon reaction is to blame the learners' weaknesses and keep teaching in the same way. Another better reaction is to 'teach harder,' lavishing more time and attention on characteristic difficulties without any causal analysis of what makes them problematic. The most effective is to 'teach smarter' based on a causal analysis refined through experience. The construction of informal theories of difficulty is an essential part of teaching.

His theory was relevant to the study because it explains how teachers are known for complex or challenging ideas. The theory of difficulty is most significant and helps to understand the context of the study as it explores the challenges teachers encounter in implementing reading literacy programs in elementary schools.

Objectives of the Study

The study's main objective was to determine the level of difficulties encountered by vocational students in the online-earning modality in one of the vocational colleges in Langfang City, Hebei Province, China, in 2023-2024 as the basis for an intervention plan.

Specifically, it sought to determine 1) the degree of difficulties encountered by vocational learners in online learning modality in one of the vocational colleges in terms of Teacher's Instructional Delivery and Teacher's Assessment of Learning; 2) the significant difference in the degree of difficulties encountered by vocational learners in online learning modality in one of the vocational colleges when grouped and compared according to the aforementioned variables.

Research Methodology

This section presents the research design used, the locale and respondents of the study, the research instrument used, the validity and reliability of the research instruments, the conduct of the study, the research protocol, and the procedure in the analysis of the data relative to the specific objectives and the statistical tools used in the study.

Research Design

This study employed a descriptive research design to determine the level of difficulties vocational learners have in the online learning modality in one of the colleges in Langfang, Hebei Province, China. The study also aims to determine and describe the conditions in their present state, practices, beliefs, and affects the respondents feel. Thus, the researcher believed the descriptive research design was suitable for the present study. Descriptive research design is a powerful tool used by scientists and researchers to gather information about a particular group or phenomenon. This type of research provides a detailed and accurate picture of the characteristics and behaviors of a particular population or subject. By observing and collecting data on a given topic, descriptive research helps researchers gain a deeper understanding of a specific issue and provides valuable insights that can inform future studies.(Sirisilla, 2023). Descriptive research aims to depict and explain current situations, prevailing practices, beliefs, ongoing processes, observed effects, or emerging trends. It often involves correlational analysis.

Respondents

The study's respondents are the four (4) sections of graduating students of the Internet College of Beijing Vocational College of Economics and Technology in Langfang, Hebei Province, China.

Instruments

This study utilized a researcher-made questionnaire. The researcher made a questionnaire that has two parts. The first part comprised the personal profile of the respondents in terms of sex, parents' highest educational attainment, average family monthly income, and family size. The second part included the level of vocational learners' difficulties in the online learning modality. The questionnaire comprised ten items per area, totaling 40 items in all. It was subjected to validity (5.00-excellent) and reliability (0.98-excellent). All of them were interpreted as worthy and good, respectively. They were asked to rate each item using the five-point Likert scale, which contains the following scores: 5 – Always; 4 – Often; 3 – Sometimes; 2 – Rarely; and 1 – Almost Never.

Data Gathering Procedure

The researcher distributed the questionnaires to the target respondents through the approval of the School Director of the College of Beijing Vocational College of Economics and Technology in Langfang, Hebei Province, China. A consent form was given to the parents to allow their students to be the subject of the study. The purpose of the study was adequately explained to the learners and the parents by the researcher. The researcher conducted the questionnaire during the learners' free time to ensure no disruption of classes. The learners' responses to the research questionnaire were anonymous, and the researcher preserved the confidentiality of the learners' data. Further, while administering the questionnaires, the researcher strictly follows the health standard protocols of the Department of Education. After answering, the data was collected, tallied, tabulated, and interpreted based on the study's objectives using the proper statistical tools with the aid of the Statistical Package for Social Sciences (SPSS) by the statistician assigned.

Data Analysis and Statistical Treatment

Objective No.1 used the descriptive-analytical scheme and frequency, and percentage to determine the profile of the respondents according to sex, parents' highest educational attainment, average family monthly income, and family size,

Objective No. 2 used the descriptive-analytical scheme and means to determine the level of difficulties of learners in the online learning modality,

Objective No. 3 used the descriptive analytical scheme and means to determine the level of difficulties of learners in the online learning modality when grouped according to the abovementioned variables,

Ethical Considerations

Ethical considerations are the principles that must be followed when conducting any. Ethical considerations ensure that no human rights are violated and that research is conducted with no hidden agenda (Bhasin, 2020). The researcher emphasized the respondents' voluntary participation, informed consent, risk of harm, confidentiality, and anonymity to protect the study's participants.

In this research, voluntary participation was ensured by having participants sign or agree to a consent form, where they could provide their initials or an alias. They were informed that they could only withdraw from the study if they provided a reason after signing the consent form. In terms of informed consent, participants were thoroughly briefed on the research procedures and associated risks, and their consent to participate was obtained. Measures were taken to mitigate the risk of harm, ensuring that participants were not exposed to situations that could potentially endanger them due to their involvement in the study. If this happens, the participants can decline to answer all the questions and may withdraw their participation at any time. For confidentiality, the researcher guaranteed that the participants' identifying information would not be made available to anyone not directly involved in the study. Further, for the anonymity of the respondents, they used aliases or initials to keep their identity anonymous to the researcher and other participants.

Results and Discussion

This section deals with the presentation, analysis, and interpretation of data gathered to carry out the objectives of this study. Appropriate procedures were followed to give exact data and substantiate solutions to each problem. The data gathered from the respondents' responses to the instrument were tallied, tabulated, and subjected to statistical analysis and interpretation following the objectives of the investigation. These are reflected in this portion of the research work.

The Degree of Difficulties Encountered by Vocational Learners in Online-Learning Modality in one of the Vocational Colleges in Teacher's Instructional Delivery and Teacher's Assessment of Learning

Table 1

The Degree of Difficulties Encountered by Vocational Learners in Online-Learning Modality in Teacher's Instructional Delivery

Teacher's Instructional Delivery **Items**	**Mean**	**Interpretation**
I have difficulty…		
1. when following instructions that need clarification due to limited reception of the internet connection.	1.84	Low Degree
2. when listening to the online discussion without the teacher explaining it.	1.32	Very Low Degree
3. when seeing a few examples illustrated for online instruction.	1.20	Very Low Degree
4. when noticing no connection between the lesson and real life.	1.34	Very Low Degree
5. when realizing the directions of performance tasks are vague because online resources to support the learning process are limited access.	1.62	Low Degree
6. when various distractions from social media hinder my accomplishments in-class instruction.	2.14	Low Degree
7. when the environment is too noisy during online classes.	1.62	Low Degree
8. when the teacher presents many activities to perform within a limited time.	1.52	Low Degree
9. when recalling not well-retained previous lessons.	1.64	Low Degree
10. when data have been consumed due to overloaded activities.	1.32	Very Low Degree
Overall Mean	**1.56**	**Low Degree**

Table 1 shows the questionnaire data on the degree of difficulty teachers encounter in the online teaching model. The overall mean was 1.56, which was interpreted as a low degree. The highest mean score in this section is 2.14, which is interpreted as a low degree. In No.6, the problem mentioned is "when various distractions of Social Media hinder my accomplishments in-class instruction." The lowest mean score in this section is 1.20, which is interpreted as a Very Low Degree. In No.3, the problem mentioned is "when seeing few examples illustrated for the topic in online instruction."

The results show that the degree of examples of content interpretation can be maintained in class. However, the interference of social media has had a particular impact on students' learning. Lu Feng believes that the extensive use of electronic media in teaching will affect the development of interpersonal skills.

Similarly, too much dependence on social media will correspondingly reduce students' real life and communication time, alienate reality groups, is not conducive to the formation of good interpersonal relationships, and cause some students to have interpersonal barriers, gradually making communication alienated: on the one hand, they are online communication, with a variety of humorous way with many strangers learning problems, on the other hand, they are silent in reality, even afraid of communication with real learning (Lu Feng, 2014).

To achieve better learning results, it is essential to use communication technology to expand rich, face-to-face communication and develop good interpersonal communication skills. As Cardon and Okoro say, technical tools (electronic media) should not be used instead of interpersonal communication but rather to complement face-to-face lectures and discussions (Okoro, 2012).

Table 2

The Degree of Difficulties Encountered by Vocational Learners in Online-Learning Modality in the Teacher's Assessment of Learning

Teachers' Assessment of Learning Items	**Mean**	**Interpretation**
I felt difficulty towards assessments…		
1. When I have limited internet access.	2.02	Low Degree
2. when so many unfamiliar words are involved in the assessment.	2.40	Low Degree
3. when there are long descriptions in the test items.	2.40	Low Degree
4. when given so many choices to answer.	2.16	Low Degree
5. when I am required to show many illustrations.	1.26	Very Low Degree
6. when I am confronted with the use of unfamiliar words in the items.	2.62	Moderate Degree
7. when I am forced to recall previous principles in the test items.	2.24	Low Degree
8. when I am obliged to submit tasks in a short period.	2.54	Moderate Degree
9. when I am demanded to provide feedback/results quickly.	2.60	Moderate Degree
10. when there is no provision for choices for answers in the test.	3.06	Moderate Degree
Overall Mean	**2.33**	**Low Degree**

Table 2 presents the results of the questionnaire data on the degree of difficulty encountered by vocational learners in the field of teacher learning assessment in the online learning model. The overall mean was 2.33, which was interpreted as a low degree. The highest average score in this domain is 3.06, and at No.10, it is interpreted as a Moderate degree with content "when there is no provision of choices for answers in the test." The lowest mean score in this field is 1.26, and at No.5, it is interpreted as a very low degree with content "when I am required to show many illustrations."

The results show that the test needed to be changed for the teacher. However, the lack of answers to the test made it difficult for the students. Compared with the selective test questions, the questions without choice are more of a test for students. Its answers need complete text expression, and it is a test of students' knowledge reserve and understanding. No selected short answer question is essential in the test, so the teacher should increase the detailed explanation of the knowledge points in class.

The Comparative Analysis of the Degree of Difficulties Encountered by Vocational Learners in Online-Learning Modality in one of the Vocational Colleges in Teacher's Instructional Delivery and Teacher's Assessment of Learning when grouped and compared according to Sex, Parents' Highest Education Attainment, and Average Family Monthly Income

Table 3

The Differences in the Degree of Difficulties Encountered by Vocational Learners in the online Online-Learning Modality in Teacher's Instructional Delivery and when grouped and compared according to variables

Teachers' Instructional Delivery							
Variables	**Categories**	**N**	**Mean Rank**	**Mann Whitney U - test**	**Sig. Level**	***p*-value**	**Interpretation**
Sex	Male	31	24.16	253.00	0.05	0.402	Not Significant
	Female	19	27.68				
Parents' Highest Educational Attainment	Lower	34	28.32	176.00		0.044	Significant
	Higher	16	19.50				

Average Family Monthly Income	Lower	25	30.68	183.00	0.011	Significant
	Higher	25	20.32			

Table 3 compares the level of difficulty students encountered in online teaching methods and grouping by variables and student gender, highest parental educational level, and average monthly family income using the Man Whitney U test.

From the table, a mean grade of 24.16 for men and 27.68 for women, with a p-value of 0.402, interpreted as not significant.

Regarding the highest parental educational attainment, the mean grades of lower-educated parents were 28.32 and 19.50, with a p-value of 0.044, interpreted as significant.

Regarding average monthly household income, the average ranking with a lower average monthly income was 30.68, and the higher average monthly income was 20.32 with a p-value of 0.011, interpreted as significant.

When students were grouped by the highest parental education and average monthly household income, the p-value was less than 0.05, interpreted as significant.

Thus, the null hypothesis states that "The difficulties encountered by vocational learners in online-learning modality vary to a certain degree." it is accepted.

This means that the highest level of education and the average monthly family income affect the level of difficulty that career students encounter in online teaching methods in the field of teacher teaching delivery.

However, when students were grouped by gender, the p-value was more significant than 0.05, interpreted as non-significant.

Therefore, student gender does not affect the degree of difficulty encountered by vocational students in the online teaching method in the field of teacher teaching delivery.

Table 4

Differences in the Degree of Difficulties Encountered by Vocational Learners in Online-Learning Modality in Teacher's Assessment of Learning and when grouped and compared according to variables

Teachers' Assessment of Learning							
Variables	**Categories**	**N**	**Mean Rank**	**Mann Whitney U - test**	**Sig. Level**	***p*-value**	**Interpretation**
Sex	Male	31	27.63	228.50		0.185	Not Significant
	Female	19	22.03				
Parents' Highest Educational Attainment	Lower	34	26.06	253.00	0.05	0.692	Not Significant
	Higher	16	24.31				
Average Family Monthly Income	Lower	25	26.84	279.00		0.514	Not Significant
	Higher	25	24.16				

Table 4 compares the degree of difficulty students encountered in online teaching methods in teacher learning assessment and grouping by variables and student gender, maximum parental educational attainment, and household average monthly income using the Man Whitney U test.

As shown in the table, the mean grade for males was 27.63, and for females, it was 22.03, with a p-value of 0.185, which is interpreted as insignificant.

Regarding the highest parental educational level, the mean grade of lower educated parents was 26.06, and that of higher parents was 24.31 with a p-value of 0.692, interpreted as insignificant.

Regarding average monthly household income, the average ranking with a lower average monthly income was 26.84, and the higher average monthly income was 24.16, with a p-value of 0.514, interpreted as insignificant.

When students were grouped by gender, highest parental education, and average monthly household income, the p-value was more significant than 0.05, which was interpreted as insignificant.

The null hypothesis states that "The difficulties encountered by vocational learners in online-learning modality vary to a certain degree." it is not accepted.

This means that student gender, maximum parental educational attainment, and average family monthly parental income do not affect the level of difficulty vocational students encounter in online teaching methods in teacher learning assessment.

Conclusions

Given the above findings, the following conclusions were drawn:
This time, the online learning difficulties of higher vocational students are investigated and studied. Research shows that students will have a particular impact on their studies based on their parent's education level and average family income.

The highest educational level of the student's parents and family income will significantly impact students' difficulties in teacher-teaching delivery. In contrast, the challenges faced in teacher teaching evaluation have no significant effect. The gender of this factor makes the difficulty students experience in online learning have no significant impact in both the teaching delivery and teaching assessment domains.

Based on the results of the student questionnaire, students clarified the impact of social media on learning in the teaching delivery field for teachers. In questions in the teacher teaching evaluation, students find it challenging to face questions not provided. These are the problems that schools need to clarify in terms of teaching guidelines and improve teaching programs immediately.

These studies found that in addition to helping the school improve its teaching strategy, discard its dross and extract its essence. At the same time, it also provides a significant reference value for other colleges in similar situations and improves the online teaching program for higher vocational students.

Based on these findings and conclusions, the researchers have made the following recommendations: Schools continue to improve the quality of teaching and help students with lower average family income and less educated parents under privacy protection. In the process of online teaching, make full use of the tool, which may make students unable to focus on learning. This means that online teaching should not just be remote teaching but should make actual use of its functions to impact students' learning positively—for example, a virtual instance demonstration in class or a virtual test in class.

In ordinary teaching, teachers should explain the knowledge points more times and, in more detail, to help students deeply remember and understand these knowledge points and deal with all kinds of questions in the test. In addition, although some factors will significantly affect the students' online learning difficulties, but must consider the interaction between different factors seems to be just a factor; behind is the story of a family, so in teaching also, should students' family a simple background check to better help students of learning.

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He Yu, Ph.D in Educational Management, The Master's major is the activity organization and management. His research interests are electronic engineering, vocational education, education, management, and other allied field

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