

A Study of Effects of School Facilities on Learning Performance of Vocational High School Students: An Empirical Study

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Abstract: A large amount of studies has been conducted to deeply comprehend the relationship between school facilities and students' performance in academic term; however, it appears that there is a limited amount of studies for this objective on vocational education. To contribute for the need of this concern, this study aimed to explore the relationship of school facilities on students' performance in vocational high schools. A qualitative methodology was employed, with structured- interviews as the instruments for data collection. Participants were five doctoral students and one post-doctoral student, and they were doing their studies at a university in Douliou county, Taiwan. All participants' responses were recorded and then transcribed. Based on participants' responses, in vocational technical high school, classroom facilities, laboratory facilities and playgrounds highly affect students' learning performance. Also, the obtained data emphasize the availability, quality and quantity of equipment in classrooms and workshop rooms. Obtained data also presented the interesting point, role of playground to learning performance of students in vocational high schools. The study suggested the concern about playgrounds to enhance the motivation and learning effectiveness of students in vocational high schools.

Key words: *school facilities, students' performance, relationship, vocational technical high school*

1. INTRODUCTION

Education is indicated as the process of learning and teaching or the interaction between teachers and students, and in the process of learning and teaching, physical facilities, which are considered as learning resources, play an essential role for both students and teachers in educational activities. Because of its importance, there have many studies focusing on the relationship between school facilities and the outcome of learning and teaching, and those studies are diverse in targeted objectives. Some researchers focused on the quality and conditions learning resources, while others concentrated on the design and management of learning resources. To take for example, Bowers and Burkett, [1] emphasized the role of facilities features and conditions on students' achievement, while Dawson. and Parker [2] tried to explore the impact of the quality of school environment on the attitudes, behaviors and performances of teachers.

Moreover, almost all researchers who concentrated on the relationship between school facilities and learning and teaching outcome, asserted that there is a significant

relationship between school facilities to the outcomes of teaching and learning activities. Earthman [3] argued that conditions of school buildings and environment are cumulatively affect students' academic performance Chan [4] discovered that school facilities are essential to form learning styles and performance of students. Furthermore, Earthman and Linda [5] proved that school environment, lighting, adequate size and availability of materials and equipment have a high correlation with students' performance and behavior.

Additionally, education is diverse in fields and levels, so physical facilities are supposed to be different in uses and kinds between educational fields, basing on the particular learning and teaching processes of both students and teachers in specific courses. For instance, in term of academic education Philias [6] presented a significant role of textbooks, classrooms, teaching materials and laboratories on mathematic students, while in term of vocational education Audu [7] emphasized the importance of training machines and other equipment related to workshop facilities on

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improving the practical skills and knowledge of students.

It appears a noticed point that there is a shortage of concerns about the relationship of school facilities on learning and teaching process in term of vocation education, yet there have limited number of research of this objective in term of vocational education. Many raised up questions that “How is the role of school facilities on vocational students?” or “between classroom materials and equipment and laboratory equipment and machines, which prominently affect students learning performance?”.

In order to find out the answers for above curious questions, the study aims to explore the relationship of school facilities to learning performance of VHS students. The study will focus on answering the question:

Is there any relationship between school facilities on learning performance of VHS students?

2. LITERATURE REVIEWS

The term facility and performance have been the popular objectives of various studies. Thus, there are varied ways to form the meanings of these two terms. In order to give an overview understanding of these two terms as well as to form the frame of the study, this part of the article aims to present the perspectives of previous studies related to the key objectives of the research, the definition of educational facility, concept of students' performance and relationship of school facilities on students' performance.

Definition of educational facility

Educational facility is indicated as the learning resources which students and indicators can utilize for their learning and teaching activities, and the term educational facility is varied in meaning. Defined Term dictionary stated that educational facilities are buildings used for learning development of enrolled students for whether public or private school, whether academic or technical vocational schools. Differently, Legal dictionary identifies educational facilities are facilities which students can use for development of their potentials, and educational facilities include buildings, fixtures and equipment essential for the effective and efficient operation of educational activities. Jeffery [8]. defined that educational facilities are compulsory components of learning conditions, and educational facilities not only includes materials, equipment and information technology, but also various aspects of buildings and environments. In support as a summary of above statements, Hallak [9] defined that educational facilities are major figures dedicating to the success of process and outcome of academic achievement, and educational facilities consist of various resources for learning and teaching, such as school buildings,

classroom, libraries, laboratories, instructional materials and playgrounds.

Concepts of Student's performance

Learning performance of students, which is related to the procedure of learning, is formed by impact of various factors, such as school facilities, school environment and teaching methodologies of teachers, yet it is hard to form students' performance in one way, since students are different from each other from shaping their ways of learning. If motivation is the first stage for learning input, performance of students is comprehensive as the attempt to reach the achievement through knowledge, skills and attitudes (David and Gary [10]). Differently, Sabine and Micheal [11] identified performance is the individual behavior of students in doing specific tasks, and it is the measured outcome for learning behavior.

Additionally, Don [12] argued that performance is to perform in order to get valuable outcome. Don [12] also asserted that level of performance of an individual depends on five objectives, level of identify, level of skills, level of knowledge, context of performance and personal factors. Similarly, Hibbard [14] discovered that learning performance of students is formed into three factors, the knowledge, skills and behavior.

In conclusion, there are three steps to define a learning progress of individuals, the input, processing and the outcome. Learning performance of students is formed in the processing step, and it is indicated as the procedure of obtaining their planning valued outcomes. Also, Learning performance is measured basing on three major factors, the knowledge, skills and behavior of learning.

Role of school facility to learning performance of students

Learning resources play an important role in educational activities, since learning resources not only impact students' performance but also instructors' performance (Stephen Munguti [14]). In collaborating for that, Tadesse [15] viewed that the quality and quantity of school facilities and teaching materials really contribute to the academic performance of both students and teachers. According to Tadesse, adequate and well-conditions facilities motivate good performance in the learning and teaching activities, while low-standard facilities cause negative impact on educational performance of both students and teachers.

However, to emphasize the relationship of school facilities on students' performance only, Torupere, [16] pointed out that design of school facilities, instructional materials and school location significantly affect students' academic performance. Similarly, Mudassir and Norsuhaily, [17] duplicated that students who study in schools with adequate facilities, good instructors and well-designed environment have better performance

than students learning in schools with low quality of these three factors. Additionally, Akomolafe and Adesua [18] summarized that not only quality but quantity of school facilities should be concerned to offer a suitable learning resources and environments for helping students to generate good performance.

Ishtiaq and Qaiser [19] specifically emphasized the essential of classroom materials for students' performance, and in accordance to his study, students who study in well-organized and well-equipped classrooms often perform well than students who study in low-organized and equipped classrooms. Modifying for that, Ryan [20] figured out that classroom environments, such as procedure of managing materials, classrooms-temperature and size of classrooms, should be highly concerned to generate suitable environment which enable students to perform well.

Laboratory is indicated as 'workshop' or 'practical activity room' which provide students opportunity to carry out what they have learnt in classrooms (Seweje, [21]). In laboratory, learning materials and equipment are highly correlated to students' performance (Marietta, [22]). Moreover, the availability of laboratory, such as equipment, machines, materials and qualified teachers must be adequate and well-prepared to the needs of students in order to motivate their learning behaviors (Mercy [23]).

Although playgrounds not directly affect the learning outcome and performance of students, playgrounds provide students opportunity to enrich their cognitions, physical health and communitive skills (Saul, [24]). To confirm for that, Williams [25] asserted that playgrounds not only give students chance to have physical benefits but also emotional and social benefits. Furthermore, Basil [26] explored the interactive impacts of school playgrounds and other school buildings. Thus, playgrounds may work as the places for continuing study for students after their learnings in classrooms or laboratories.

To work as the conclusion for above arguments, Adeogun [27] discovered that learning performance is effective when students meet all needed and supportive facilities which serve their studies, and school facilities, such as libraries, classrooms, laboratories and workshops seem to play essential function for well-motivated performance of students (Mark [28]). Playgrounds do not directly affect students learning performance, but they contribute for the well-being of cognition and physical substance of students.

3. RESEARCH METHODOLOGY

Subjects of the study

Participants of the study were six vocational technical high school teachers who are doing their studies at the DVTE of YUNTECH. Among these participants, one is doing his post-doctoral program, and five others are doing their doctoral programs. The age of participants

ranged from 35 to 60 years old, with the mean of 43 respectively.

Furthermore, among these six, two participants have been teaching in on high vocational school in Chiayi, one specializes in teaching of kindergarten programs and one specializes in teaching hotel management programs. A participant has been teaching in a VHS in Taichung for fifteen years, while the participant comes from Nantou has been teaching for ten years, majoring in metal design teaching, in a local vocational technical high school. The rest two participants are two Indonesian teachers, and they are not in teaching service, as they are doing their studies in Taiwan. However, they all had been teaching in vocational technical high school for at least fifteen years. One of them had been teaching for 20 years, majoring in Culinary programs and the other had been teaching for fifteen years, majoring in automobile teaching.

Data collection

A qualitative methodology was employed for the study, and structured-interviews were the main instruments for data collection. Totally six in-depth interviews were conducted for getting responses from participants. The interview times ranged from 40 to 50 minutes, with the mean of 45 respectively for each interview.

Firstly, participants were invited to join the interview by via-Line messenger. Secondly, suitable time schedules were set up for interviews, based on the available times of each participants. Four interviews were face-to-face interviews, and the interviews were conducted in study-room, with a private environment. Two participant were not able to attain campus for face-to-face interview as scheduled, as they had occasional works, so two-skype-interviews were conducted to get responses from these two participants.

Word-format-files, which contains list of prepared questions related to the topic of research, were given to participants along with invitation letters in order to give candidates time for preparing for their responses. The word-format-files also includes brief definitions of the term facility and performance, purposing to offer candidates general and basic views of meanings of the terms. In summary, the questions-list was formed into three sections. The first section includes brief definitions of the term facility and performance and some questions which require participants to give their understanding about these two terms. The second section includes questions which require candidates to give statements about the relationship of classroom materials and equipment to learning performance of vocational students. The final section includes questions which require candidates give their utterances about the role of laboratory or workshop equipment and machines to the learning performance of vocational students.

Moreover, all interviews were recorded into mp3-files in order to use for writing down effective transcriptions

of the statements of participants. During the process of transcribed writing, taking notes was carried out in order to form the data into the categories easily.

Data Analysis

Firstly, all recorded files were written down into transcripts, fully in English, by the researcher for the descriptive analysis. Then, the thematic method was applied to analyze the data into themes and categories. During the coding process, taking notes was conducted in order to get major arguments to support for each domain of the study purpose. Afterward, statements of each category were selected to defend for the domains of study goals.

For coding data, thematic method is applied for coding obtained data. First of all, Moira and Brid [29] explained in detail six steps for coding data using thematic method. Accordingly, getting familiar to the data, generate initial codes, search for themes, review themes, define themes and write up the results are compulsory steps for the process of coding data (Moira and Brid [29]). However, in this study, the first step is to generate initial codes. To regard to this step, each of transcript was categorized into codes, and then all similar codes are put together under themes. After that, review process was conduct to check extract the codes into correct themes. In the define theme section, the meanings of themes are figured out for writing up the results. As the results of the coding process, there are two themes and five coding categories were generated.

Table 1. Design of the coding process

| Mode of steps | Purpose |
|---------------------------|---|
| Step 1: Initial coding | Classify the data into initial categories |
| Step 2: Search for themes | Synthesize categories under themes |
| Step 3: Reviews themes | Extract the quotations and categories under similar themes |
| Step 4: Defined themes | Figuring out the meanings of themes and their categories |
| Step 5: Writing up | Summary the statements in each themes for writing up the findings |

4. RESULTS

The qualitative methodology was employed for the study, and structured-interview effectively got participants' responses effectively. The transcribed data showed the grids which are linked to the framework of the literature review and the purpose of the research. Based on the similarities and differences of participants' responses, the key findings, which are about the relationship between school facilities and learning performance of VHS students, were obtained respectively. Accordingly, the findings showed that classrooms facilities, laboratory facilities and

playground play important role as motor for learning performance of VHS students.

The importance of classroom facilities on students' performance

All selected participants emphasized on the importance of classroom facilities on the performance based-learning of VHS students. Generally, they highly concerned about the quality of instructional materials, procedure of classrooms management and condition and quantity of classrooms equipment.

According to participants' views, instructional materials are most important, since instructional materials provide students with necessary theories for their practical training. Therefore, the instructional materials must be related to their learning subjects, and must be adequate and clear as the effective guidance for their post-practices. They strongly proclaimed that an effective and sufficient instructional materials help students to enrich their knowledge easily, and thus they can apply their knowledge for practical training properly.

Moreover, most of interviewees pointed out that well-organized classrooms properties highly generate motivation for students to perform well in learning. The ways of arranging of chairs, tables, whiteboards and computers directly affect students' learning capacities. Many interviewees said that tables and chairs in classrooms must be managed in sufficient procedures in which students are available to listen to lectures and able to see vision-objects or guidance in whiteboard or computer monitors.

Furthermore, classrooms' equipment should be well-working and well-equipped in order to help instructors to conduct their teachings effectively. Participants strongly stated that classrooms, well-equipped with computers, projectors, monitors and speakers, provide students opportunities to comprehend what teachers talk and describe more easily. Additionally, all classroom equipment should be renewed for a certain period of time to make sure they work effectively; many notified that under-condition equipment not only make teachers but also students feel annoy and unsatisfied for teaching and learning activities.

The essential of laboratory facilities on students' performance

Interviewees explained the important role of workshop facilities to VHS students. According to their perspectives, workshop rooms are the places for vocational technical students to carry out the classrooms' theories. Thus, the availability, quality and quantity of workshop facilities are highly concerned by all interviewees.

In term of availability and quality, interviewees argued that workshop rooms equipped with adequate machines and equipment highly motivate students to perform well in their practical trainings. Because vocational

education is linked to the demands of industry; thus, all machines and equipment for workshops should be updated to the dynamic development of industry in order to generate the connection between students' practiced skills and the need of labor-market. When students see that all what they practice in workshops are connected to the demand of industry, they have high determination and self-motivation to perform properly during their practices. Additionally, workshop facilities should be related to the study programs of students to make them feel convenient for practice.

Moreover, interviewees also gave a high concern about the quantity of workshop facilities and the amount of students. Interviewees said that they encountered that when the amount of students are large and the facilities are limited, some students just walk around without practice. Thus, they cannot improve their practical skills effectively.

Necessity of school playgrounds to learning performance

Interviewees viewed that the playgrounds are not an important part of learning resources; however, playgrounds are places in which, somehow, indirectly stimulate students to bolster their motivation and determination in learning. In playgrounds, students have opportunity not only talk and share about their personal things but also discuss about their learning experiences, knowledge and learning goals to each other. Thus, in this case, playgrounds, respectively, works as group-learning environment for students.

Furthermore, participants proclaimed that playgrounds are places for students to refresh their minds and to balance their energies in order to have better focuses on their continuous studies. Students often feel tired if they have to continue to study for a long time, and they tend to neglect of teachers' speeches in the classrooms and are under-motivated in practical trainings. Therefore, playgrounds provide them places for refreshing their minds and their energies for better studies.

Table 2. Summary of the major facilities and their importance to learning performance of students

| Facilities' modes | Necessary modes |
|-----------------------------------|-------------------------|
| Classrooms' facilities quality | Availability, quantity, |
| Workshops' facilities quality | Availability, quantity, |
| Playgrounds | Availability |

5. DISCUSSION

On the grids of the prospective investigation on the relationship between school facilities on learning performance of vocational students, researcher found out that there is significant correlation between school

facilities and learning performance of vocational technical high school students. Accordingly, classroom facilities, laboratory facilities and playground highly affect students' performance.

In term of classroom facilities, research found out that the respective findings are highly connected the studies of Ryan [20] and Qaiser Suleman [30]. Accordingly, suitable classroom environment, adequate instructional materials and well-organized, well-qualified equipment are significantly connected to the learning performance of students. Thus, there should have concerns about availability and management of classroom equipment in order to help students to perform effectively and get high outcome in their learnings.

In term of laboratory facilities, key concepts obtained emphasized that the availability, quantity and quality of workshop facilities should satisfy the need of students in order to persuade them to perform well in academic activities. These key concepts are strongly linked to the findings of studies of Mbaga [31] and Neji [32] considerably. Regarding to those findings, workshop facilities should be adequate and quantitated in order to enable students to access and meet all the machines, needed materials and necessary equipment to serve for their studies well and sufficiently.

Having similar perspectives with Catherine [33] the study stated the role of playground on students' activities. Key concepts related to the role of playground to students' performance identified that playground enables students to interpret to enjoyable games and communication, which are helpful activities for physical and social- well-being which highly associated to their living and learning activities. Additionally, Basil [26] asserted there is a noticeable note of interactive effects of playgrounds and other buildings in schools. Playgrounds, somehow, indirectly, influence learning performance of students.

Despite the lack of previous researches on the impact of school facilities on learning performance of VHS students as the support for the study, the obtained findings of this study were satisfied the original purpose of study and respectively linked to the findings of many other researchers.

However, the study is limited in teachers' perspectives on the relationship of school facilities on students' performance. The result would be more precise and effective if researcher could get data from the responses of students themselves on the same topic, and thus a combined data of teachers 'perspectives and students' perspectives on this topic is believed to provide a certain evidence for the study.

6. CONCLUSION

This qualitative based study aimed to evaluate the roles of school facilities to learning performance of students in vocational high schools. As the prediction, the obtained data showed the vital roles of classrooms' and

workshops' facilities to learning performance of vocational high school students. In regarding, classrooms should be equipped with compulsory tools and equipment, such as computers, projectors, available used tables and chairs, to provide motivated learning environments for students to easily comprehend and digest the teaching materials. The design and procedures of management of classrooms' space are also worthy contributing to the convenient conditions for learning and teaching activities. Workshop rooms were expected to be equipped with tools and equipment both in quality and quantity to offer students opportunity to perform well in practice.

Interestingly, the study highlighted the precious role of playground to learning performance of students in vocational high schools. Although playgrounds, as predicted, are not key figures impacting students' performance, they, according to the collected data, illustrated the contrary of this concept. All participants viewed of playgrounds as the key factors for generating students with high motivation and persistence in performance of their learning attitudes.

Suggestion for those who may concern about the construction of schools, especially in term of vocational high schools is the availability, quality and quantity of school facilities, specializing in the focus of classroom facilities and laboratory facilities, would be helpful to educational activities of both students and teachers. Playgrounds should be arranged to generate students the environment for relaxing and social integrations.

LIST OF ABBREATIONS

VHS: Vocational High School

VHSs: Vocational High Schools

DVTE: Department of Vocational Technological Education

YUNTECH: National Yunlin University of Science and Technology

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