



Research On The Model And Path Of "Organised Scientific Research" Carried Out By Higher Vocational Colleges

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ABSTRACT

Organised scientific research is considered as a significant aspect that can be used by the researchers for improving their academic performance within the educational centres. The aim of the study is to analyse and evaluate the path and model of the organised scientific that is utilised by the organised scientific research. It also includes understanding the strengths, weaknesses, and potential improvements of the organisations. The study has utilised 50 teachers as sample for the study and it has been found that the independent variables that are utilised by the researcher have partial impact on the dependent variable used for the study. Most of the respondents are male and in the age group of 25 to 30 years.

Keywords: Organised scientific research, Vocational colleges, Institutional Structure, Funding and resources, Research Culture and Collaboration and Networking

1. INTRODUCTION

Research and development is mostly considered as one of the crucial aspects of scientific education [45]. It has thus become an important aspect for teachers to develop their skills related to scientific research training and ensure they are able to direct the students during the process of educational growth [44][48]. Many studies have provided that conducting scientific research during college life is effective in enhancing the career of students and thus, the requirement of high and developed teacher training has become necessary [43]. One of the most important aspects that is integrated in the field of scientific research is the presence of openness and collaboration that enhances the process of study and ensures the involvement of innovation in the education process [42] [47]. However, the development of a research culture of transparency related to integrating scientific research in educational courses has become a challenge for educators to incorporate [41] [46]. Development of institutional structure has also been identified to be a necessity in order to ensure the innovation development process promoted by education is being efficiently followed [40]. In order to achieve this, it is necessary that teachers ensure collaboration between students for sharing innovative ideas and ensuring productivity from the study [39].

A. Aim:

The aim of this research is to investigate and analyse the model and path of "organised scientific research" conducted by higher vocational colleges. The research aims to understand the current practices, strengths, weaknesses, and potential improvements in the organisation and implementation of scientific research in higher vocational education institutions.

B. Objectives

RO1: Assess the effectiveness and efficiency of the current models and paths employed by higher vocational colleges.

RO2: Identify the strengths and weaknesses of the current models and paths of organised scientific research.

RO3: Explore the challenges and barriers faced by higher vocational colleges in conducting organised scientific research.

RO4: Propose potential improvements, strategies, and recommendations for enhancing the model and path of organised scientific research in higher vocational colleges.

C. Research questions

RQ1: How effective and efficient are the current models and paths of organised scientific research in higher vocational colleges?

RQ2: What are the strengths and weaknesses of the current models and paths of organised scientific research?

RQ3: What challenges and barriers do higher vocational colleges in conducting organised scientific research encounter?

RQ4: What improvements, strategies, and recommendations can be suggested to enhance the model and path of organised scientific research in higher vocational colleges?

D. Research Hypotheses:

DV: The **model and path of organised scientific research** carried out by higher vocational colleges, including its effectiveness, efficiency, strengths, weaknesses, challenges, and potential improvements.

IV: **Institutional Structure:** The organisational structure and governance of higher vocational colleges.

Funding and Resources: The availability and allocation of financial and material resources for scientific research.

Research Culture: The extent to which scientific research is valued, promoted, and supported within higher vocational colleges.

Collaboration and Networking: The level of collaboration and networking with external partners, including industry, research institutes, and other educational institutions.

E. Scope of the Project:

The scope of the research being conducted is to analyse the importance of organised scientific research conducted in higher vocational colleges. The study is developed with the help of studying past literature works by other authors in relevance to similar topics. Necessary methods used in order to gather primary data are to be justified in the study. The findings from the study are able to highlight the specific developments organised scientific research can bring in the higher course of education.

2. LITERATURE REVIEW

The **theory of constructivism** states that students are able to create their own learning based on experiences that they have in their lives and transform gathered information into their own educational data [38][60]. The theory emphasises the effort taken by learners in order to gain data and generate their own understanding based on the original data that they have gathered [37].

The use of constructive learning behaviour is effective for the educators to influence students to make use of their own concepts and ideas in order to approach the research process and generate innovative production [36] [59]. This process is useful for students since scientific research is all about developing innovation rather than improving an already existing concept [58]. New concept is generated by students with the daily interactions that they have with new concepts and combining it with the previously possessed skills within every individual [35].

Model and path of organised scientific research

The model and path of organised scientific research carried out by higher vocational colleges, including its effectiveness, efficiency, strengths, weaknesses, challenges, and potential improvements. Organisational scientific research is considered extremely necessary for improving the education of the individuals. The theory supports the creation of the model and path of the organised scientific research since it includes learning by experience of the students within the vocational colleges [23]. The students perform the scientific research and therefore experience the results of the study that they use in future.

Institutional Structure

The institutional structures are defined as the social arrangements that consist of both practices and rules that are maintained within the educational institutions [1] [2]. It defines the manner in which the activities within the educational institutions are divided which involves supervision and coordination, allocation of tasks that are directed towards achieving the goals and objectives of the organisation [3].

The constructive learning supports the use of the independent variable since institutional structure helps the individual to help the students by learning and gathering experiences [4]. The effective institutional structure helps in improving the efficiency of the organisational scientific research that is used in the colleges [5].

Funding and Resources

Funds and resources are the assets that are used by the colleges in order to provide the students and teachers with various resources helping them to adopt the various scientific researches [6] [7]. The constructive theory

of learning also supports funding and resources since without funds and resources providing investment for education is not possible [29][30]. Moreover, it also helps in establishing a greater impact over the organisational scientific research [8].

Research Culture

It is necessary that the group that is conducting a new research is following a certain research culture in order to focus on the main issues in study and gather data in accordance with it [34][57]. One of the reasons that may follow the lack of interest of various students in developing scientific study is the non-existence of a proper research culture that may influence them to remain interested in the process of study [33][56]. The development of research culture within an organisation can be possible if the leaders, that is the educators in this case, have the proper capacity to drive the students towards accepting the scientific research process [32][55]. It can be seen from here that the implementation of a constructive learning process can be effective if the academic leaders are able to define a research culture that considers the usage of shared values and beliefs in order to acknowledge the significance of research practice and the output that they provide [31].

Collaboration and Networking

The presence of collaboration and networking in scientific research is of critical importance as it supports the process of improving research performance [51] [54]. However, there were certain researchers that felt that collaboration with individuals outside their community could affect the quality of data that is collected [50] [53]. Collaboration is considered to be present at the bottom of every academic endeavour developed in connection to the constructivist theory of learning, it can be said that collaboration can be made use of in order to influence students in making use of their own respective ideas and contribute to their research for connective development [49][52].

Hypothesis Development

H1: Institutional Structure has a significant impact over the model and path of organised scientific research

The institutional structure is considered to have a significant effect on the model and path of organised scientific research since it helps in improving the research practices [9] [10]. This is possible by providing the researchers with proper infrastructure and management [11].

H2: Funding and resources have a significant impact over model and path of organised scientific research

The funding and resources is extremely significant for providing the colleges with proper organised scientific research [12]. Proper funding helps in raising the efficiency of the research.

H3: Research culture significantly affects model and path of organised scientific research

The research culture is also considered to have a significant effect on the organised scientific research [13] [14]. It helps in enriching the research with values and significance.

H4: Collaboration and networking significantly impacts the model and path of organised scientific research

The collaboration and network also helps in raising the efficiency of the research results [15]. Therefore, it has a significant impact on the research.

Literature Gap

The researcher failed to discuss the relevance of data that is used for the study. This is considered as the research gap by the researcher since data is one of the most vital aspects of the study.

3. PROPOSED METHODOLOGY

This chapter discusses the various methods and approaches utilised by the researcher to conduct the study. Research philosophy can be defined as the emotion or belief that is utilised by the researcher to undertake the research [16]. There are three types of philosophies such as positivism philosophy, realism philosophy and interpretivism philosophy. The researcher makes use of the positivism research philosophy to conduct the study in a successful manner. The researcher prefers to make use of the positivism research philosophy since it is considered easier and simpler by the researcher than the other three philosophies.

Research approach can be defined as the design that is utilised by the researcher to conduct the study. There are two types of research approaches such as the deductive approach and the inductive approach [17][18]. The researcher makes use of the deductive approach for the study. The researcher prefers deductive approach since it is considered easy for the researcher. The researcher believes that using deductive approach helps the researcher to obtain the best results after conducting the entire study.

Research design is the structure that is utilised by the researcher to conduct the study. There are three types of research design such as descriptive, explanatory and exploratory research design [19] [20]. The researcher makes use of descriptive design since it provides description of the methods and approaches utilised by the previous researchers in order to conduct the study easily.

The researcher makes use of the primary data collection method collecting responses from the 50 teachers of the vocational colleges in Malaysia using organised scientific research. The researcher makes use of quantitative data analysis in order to analyse the data collected by the researcher to conduct the study [21]. The researcher makes use of the IBM SPSS Statistical Software in order to interpret the results of the study.

The researcher forms a questionnaire for the study and conducts an online survey for conducting the study [22]. The researcher distributes the questionnaire among the respondents and therefore this helps the researcher to collect the responses of the teachers easily. The researcher also maintains the validity and reliability of the data collected by the researcher for the study. The researcher makes use of data as it is collected for the study. The researcher also follows all the ethical considerations questioning the respondents by not hurting their feelings. The researcher also follows the “Personal Data Protection Act, 2010” of Malaysia while conducting the research

4. RESULTS

Demographic details

The demographic details are considered significant for the study since it provides the researcher with the nature of the respondents used for the study [23]. The below table provides the demographic details of the respondents used for the study. The respondents of the study represent that 34 of the teachers belong to the age group of 25-30 years. 8 of them are 30-35 years, 5 of them belong to 35-40 years and 3 of them are above 40 years. 36 of the teachers are male and 13 of them are female. 35 of the respondents earn 10,000 to 20,000 of income.

		Count	Column N %
Age	25-30 years	34	68.0%
	30-35 years	8	16.0%
	35-40 years	5	10.0%
	Above 40 years	3	6.0%
Gender	Male	36	72.0%
	Female	13	26.0%
	Prefer not to say	1	2.0%
Income	10,000-20,000	35	70.0%
	20,000-30,000	9	18.0%
	30,000-40,000	4	8.0%
	Above 40,000	2	4.0%

Table: Demographic Detail

Reliability Analysis

Reliability analysis helps the researcher to understand whether the data collected by the researcher is valid and reliable for the study [24]. The value of Cronbach Alpha helps the researcher to understand whether the data is valid for the study. The data is considered to be valid for the study if the value lies between 0.7 to 0.9 [25][26]. The table below shows that the value of Cronbach Alpha is 0.885, which means that the data collected by the researcher is valid and reliable for the study.

Reliability Statistics			
Cronbach's Alpha	Cronbach's Alpha	Based on	N of Items
.885	.792	Standardized Items	13

Table: Cronbach Alpha

The below table represents the mean and standard deviation of the variable used for the study [27][28]. The means of the variables vary from 1.3 to 1.5. The standard deviation of the variable varies from 0.7 to 1.09.

Item Statistics			
	Mean	Std. Deviation	N
Development of the model of organized scientific research	1.3800	.80534	50
Promoting much details and data for the research	1.3600	.80204	50

Raise the efficiency of conducting scientific research	1.3600	.80204	50
Providing efficient data and resources	1.3400	.79821	50
Provide greater information	1.3800	.80534	50
Helps us to have greater access to the raw data	1.4000	.80812	50
Allows students to strive in scientific research	1.3400	.79821	50
Useful in developing participation	1.3600	.80204	50
Influence them to take up research projects	1.3600	.80204	50
Ensure sharing of ideas and build innovative projects	1.4000	.83299	50
Enhancing the final results being produced	1.5000	1.07381	50
Generate scientific breakthrough in research	1.3800	.87808	50
Improving the educational performance	1.3600	.80204	50

Table: Reliability Analysis**Multiple Linear Regression Analysis**

The below table represents that the first IV that is institutional structure has partial impact on the dependent variable. The second IV that is funding and resources also partially affects the model and path of organisational research. The third and fourth IVs also affect the DV partially in the study.

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
		B	Std. Error				Lower Bound	Upper Bound
1	(Constant)	.078	.210		.371	.713	-.347	.503
	Development of the model of organized scientific research	-.079	.057	-.080	-1.383	.018	-.196	.037
	Promoting much details and data for the research	.055	.067	.055	.819	.418	-.081	.192
	Raise the efficiency of conducting scientific research	.841	.068	.841	12.354	.000	.703	.979
	Providing efficient data and resources	.059	.059	.059	.998	.032	-.061	.179
	Provide greater information	-.009	.056	-.009	-.167	.868	-.123	.104
	Helps us to have greater access to the raw data	-.047	.057	-.047	-.817	.042	-.163	.069
	Allows students to strive in scientific research	.001	.061	.001	.023	.982	-.123	.126
	Useful in developing participation	.054	.064	.054	.844	.040	-.075	.183
	Influence them to take up research projects	.075	.090	.075	.833	.041	-.107	.258
	Ensure sharing of ideas and build innovative projects	-.127	.067	-.132	-1.888	.067	-.264	.009
	Enhancing the final results being produced	.036	.046	.049	.784	.044	-.058	.130
	Generate scientific breakthrough in research	.086	.078	.095	1.102	.028	-.072	.245

a. Dependent Variable: Improving the educational performance

Table: Multiple Linear Regression Analysis

5. DISCUSSION AND CONCLUSION

It can be observed from the reliability analysis table that a certain value if mean has been associated with the values of the variables identified from the study. The highest value observed in respect of the variable “Enhancing the final results being produced” that has the highest value that depicts that respondents agreed highly to the impact of the variable **Collaborating and Networking** in scientific research. Another high mean has been observed regarding the same variable, portraying that the teacher identified this variable to have a significant impact over **model and path of organised scientific research**. Another major point of agreement has been observed in respect of “Raise the efficiency of conducting scientific research” against the variable of **Institutional Structure**. Thus, it can be said that teachers consider collaborative nature and networking along with the institutional structure has a major impact over the scientific research process adopted by students in higher vocational colleges.

Lower mean represents that the sample has not agreed to the impact of the variables in these studies. A comparatively lower mean has been observed regarding “Providing efficient data and resources” for the variable **Funding and Resources**. Thus, it can be understood from the analysis that teachers have not considered the significant impact of funding and resources over development of a model and path for organised scientific research.

Conducting a multiple regression analysis has portrayed that all the hypotheses have been partially satisfied. This means that the variables associated with the hypothesis have a moderate impact over the variables that have been developed or the study. It can be said from the analysis that all the variables that have been identified in respect if the analysis can moderate influence the decisions that are taken by a student regarding scientific research.

Majority of the data has been gathered from teachers who were aged between the age group of 25 to 30 years. Thus, it can be said that a certain part of the information gathered can be biased towards the data that has been related to the organised scientific research development process.

It can be concluded from the above analysis that collaboration, network, and institutional structure are to have the most significant impact over the scientific research process that is followed by students in a higher vocational institution. It is necessary that the teachers consider the importance of these factors when they are guiding the student in vocational institutes during a research. It would be possible to follow a model and path of organised scientific research process by students in the research process in higher vocational colleges.

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