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Implications of the Problem-Solving Approach on the Development of Entrepreneurial Skills among Food and Nutrition Students in Anambra State, Nigeria

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ABSTRACT

The purpose of this study was to pinpoint the implications of the problem-solving approach on the development of entrepreneurial skills among Food and Nutrition students. The 21,658 Senior Secondary School two (SSII) pupils in 254 Secondary Schools from the six Anambra educational zones make up the study's population. The sample size for the study was two hundred forty (240) students. The test is a self-developed Instrument for Measuring Psycho Productive Skills in Foods and Nutrition (IMPPSFN) that was based on the curriculum for Senior Secondary School Two (SSII), which emphasizes entrepreneurship, as well as other senior secondary school textbooks. The rating's mean (x) and standard deviation were calculated. The intra-class correlational approach was used to assess the level of inter-rater agreement. At the 0.05 level of significance, the analysis of covariance (ANCOVA), a generic linear model that combines ANOVA and regression, was employed to test the null hypotheses. According to the findings, comparing their entrepreneurial abilities in the areas of Food and Nutrition to those of their peers exposed to the lecture technique, secondary school students who used the problem-solving method showed better growth in this area. In conclusion, the problem-solving approach provides armful opportunity for Food and Nutrition students to learn by working on problems within the psychomotor domain. The report suggests, among other things, that training programs be set up on a regular basis in the form of seminars, conferences, workshops, and in-services to provide instructors the abilities they need to teach about food and nutrition.

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Introduction

In a developing economy, entrepreneurs play a crucial role in helping a nation's economy grow more quickly. Given that these students will soon be making important career decisions, the value of entrepreneurship education at the secondary school level should not be overlooked. Entrepreneurship and self-employment are expected to be viable career possibilities, especially in emerging nations, and may even be preferred to continuing with postsecondary education in light of the world's poor economic climate and increasing unemployment rates (Arafat, Saleem, & Dwivedi, 2020). The majority of young

people are unemployed because they lack the entrepreneurial skills necessary for productive job engagements. As a result, their idle hands and minds contribute to social vices like thuggery, armed robbery, militancy, restlessness, ethnic-political conflicts, and other social vices in Nigeria. Therefore, it is crucial to teach pupils actual vocational skills that they may confidently use after acquiring them in secondary school.

Since entrepreneurship is not taught as a school topic in Nigeria, the best method to increase learners' awareness of the possibility of becoming entrepreneurs is to integrate the development of actual entrepreneurial skills into the curriculum (Iqbal, Yi, Ashraf, Chen, Ning, Perveen& Imran, 2022). The study of home economics is frequently referred to as life education within the context of secondary education. Home economics has typically focused on teaching students how to handle the issues and difficulties that come with being a homemaker since the home and family have traditionally occupied a significant portion of a person's life (Haapaniemi, Venäläinen, Malin&Palojoki, 2019). Foods and nutrition, clothes and textiles, child development, housing and interior design, family and consumer economics, and management are common topics included in secondary school home economics courses. Project-centered methods and individualized problem-solving education are frequently employed. In order to improve students' learning outcomes, instructors should apply these teaching strategies in an effective manner and should not forget about them (Sievert, Lawrence, Naika& Baker, 2019). Research has demonstrated that teachers frequently use ineffective and unsuitable teaching strategies that are simple to adopt in the classroom.

The quest for an effective teaching approach for foods and nutrition, however, appears to be difficult since, particularly in public institutions, the strategy that is most effective for the learner may not be financially feasible. More specifically, a standard framework for assessing students' entrepreneurial skills in a particular Foods and Nutrition job must be created (Boyle, 2016). In addition, there isn't enough information in the literature to support conclusive comparisons between lectures and problem-solving in the delivery of food and nutrition teaching, particularly in Nigeria. There is a need to identify the most efficient way to help students gain the necessary skills for self-employment, entrepreneurship, and economic empowerment through Foods and Nutrition Education given the wide variety of teaching methodologies accessible to teachers. Entrepreneurship involves a variety of skill sets, including leadership, time management, creative problem-solving, and leadership. The promotion of psychologically productive talents in foods and nutrition depends on these entrepreneurial capabilities (Vu, 2020).

The fundamental principles of being a good secondary school teacher are on how to encourage student learning. Uwaezuoke (2022) noted that students of secondary schools are predominantly teenagers and as such undergoing the period psychologists refer to as the period of “storm and stress”. The teachers of foods and nutrition therefore should use teaching strategies that will help the students comprehend the concepts, principles, or topics being covered. There are several techniques for teaching about foods and nutrition, including as guided discovery, problem-solving, group discussions, and expository individualized techniques (Khasawneh, 2022). Some of these strategies are more activity focused than others, depending on different types of teacher-student interactions. Problem-solving is a methodical strategy that examines learning abilities, as well as understanding and producing critical and creative thinking. Despite the recognition of the significance of problem-solving skills development, there has been very little study on the topic in the field of instructional design (Van-Merrienboer, 2013). These aspects are the most significant elements of thinking and learning. When a person uses efficient and timely tactics, they are able to discover meaningful answers to issues. This is referred to as having problem-solving abilities. A methodical strategy to envisioning and comprehending a problem, developing solutions, and assessing the effectiveness of those solutions is problem solving. The teaching of home economics now includes a lot of problem solving. Teachers have recently thought about changing the focus from teaching problem solving to teaching via problem solving. Additionally, by

developing their problem-solving abilities by learning and comprehending concepts and methods, students may learn and grasp home economics principles (Taar & Palojoki, 2022).

The problem-solving method emphasizes on teaching through problem-solving contexts and inquiry-oriented environments. These contexts are defined by the instructor assisting students in developing a thorough knowledge of Foods and nutrition ideas and processes through engaging them. The problem-solving technique is fundamentally a cooperative, constructivist, and contextualized approach to learning and teaching that makes use of real-world issues to launch, energize, and concentrate knowledge creations (Kim & Park, 2021). The problem-solving method, which involves more complex and uncertain teaching situations than those found in lectures, also appears to be a key tool in fostering the development of students' knowledgebase and promotes the development of the students' professional skills and attitudes, helping them develop better study habits compared to conventional methodologies, implying that it is capable of fostering life-long and self-directed learning (Elorinne, Eronen, Pollari, Hokkanen, Reijonen & Murphy, 2020). Students must thus investigate the ideas, acquire a comprehension of the issue, relate what they have learned to what they have just learnt, and use the proper technique to solve the issue.

The home economics instructors in Nigeria's educational system need to be able to employ techniques that would help them achieve the learning goals for foods and nutrition. There are many different teaching techniques, and the choice of one depends on a number of factors, including the subject matter, the amount of time available, the students' skill levels, the size of the class, and the teachers' personal preferences (Urdziņa-Deruma & Šelvaha, 2018). However, there are numerous tactics that are essential for classroom teachers to use in order to successfully educate and facilitate learning for students. Therefore, the teacher should not just be happy with the fact that they have presented the lesson without determining whether the students have the fundamental knowledge required to grasp the lesson and lastly assessing or evaluating the development the students made at the conclusion of the class. To this purpose, several empirical research have been conducted to compare various teaching strategies, but it doesn't appear that any of these studies have been conducted to examine problem-solving strategies for the teaching and learning of foods and nutrition (Olibie, Nwabunwanne & Ezenwanne, 2013). This suggests that research on the effects of problem-solving techniques on the teaching and learning of foods and nutrition in Anambra State has to be conducted empirically. It is against this background that this research sought to examine the implications of the problem-solving approach on the development of entrepreneurial skills among food and nutrition students.

Ausubel Learning Theory served as the study's foundation. According to the principle, learners need make connections between new knowledge (ideas and proposals) and what they already know in order to truly develop entrepreneurial ability. According to Ausubel's Theory of Learning, newly acquired abilities may be combined with existing ones to form more complex abilities or ideas. Advanced organizers has these more inclusive abilities. Advance organizers might be written language or visuals. In any case, the advance organizer is made to offer what cognitive psychologists refer to as the "conceptual scaffolding" to learn new business skills. Ausubel acknowledges that prior knowledge is necessary for the development of entrepreneurial skills. In other words, our perception and acknowledgement of events and objects through pre-existing concepts is where knowledge acquisition begins. Additionally, Ausubel emphasizes the value of reception learning in educational environments as opposed to discovery learning and meaningful learning as opposed to rote learning. However, discovery learning is ineffective; rather, it was ineffective. In other words, Ausubel thought that via deductive reasoning, one may grasp concepts, principles, and ideas.

Research Questions

The following research questions were asked to guide the study:

What is the difference in pre-test and post-test mean ($\overline{x}$) scores of Foods and Nutrition Students who were exposed to problem-solving method in entrepreneurial skills acquisition in and their counterparts in the control group (lecture method)?

Research Hypothesis

The following hypothesis was formulated and tested at 0.05 level of significance.

There is no significant difference between the pre-test and post-test mean ($\overline{x}$) scores of Foods and Nutrition Students who were exposed to problem-solving method in entrepreneurial skills acquisition and their counterparts in the control group (lecture method).

Methodology

Design of the Study:

The study used a quasi-experimental research design in which the dependent variable was examined twice: once before and once after the therapy was put into practice.

Area of the Study:

The study was carried out in Nigeria's Anambra State. South-eastern Nigerian state of Anambra. Awka is the nation's capital and seat of power. Delta State, Imo State, Rivers State, Enugu State, and Kogi State serve as the states' western, eastern, southern, and northern borders, respectively.

Population for the Study:

The 21,658 Senior Secondary School Two (SSII) pupils in 254 Secondary Schools from the six Anambra educational zones make up the study's population.

Sample and Sampling Technique:

The sample size for the study was two hundred forty (240) students selected via multi-stage purposive sampling technique.

Instrument for Data Collection: The instrument was essentially designed to gauge how well students performed in the psycho-productive domains of nutrition and foods. The test instrument was a self-developed Instrument for Measuring Psycho Productive Skills in Foods and Nutrition (IMPPSFN) that was based on issues and sections of the curriculum for Senior Secondary School II (SSII) that are entrepreneurially oriented. Six areas were specifically chosen for the instrument development based on the researcher's expertise, the literature study, and other factors. The researcher also took into account the several dietary categories that are included in the curriculum. The instrument has six jobs: creating banana ice cream, baking a cake, canning tomatoes, and preparing spice blends. Other chores include making fried rice and packing it, making water yam flour and packaging it, and packaging it. According to Harrow's (1992) taxonomy of psychomotor aims, the researcher identified competences based on the chosen domains, including Basic Fundamental Movements (BFM), Perceptual Abilities (PA), Physical Abilities (Ph.A), Skilled Movements (SM), and Non-discursive Communication (NDC). The researcher's expertise instructing students on various activities, as well as descriptions of those tasks found in textbooks, are used to create the products. Furthermore, the pieces were written using a logical or reasonable method.

Validity of the Instrument: Five professionals gave the Instrument for Measuring Psycho Productive Skills in Foods and Nutrition (IMPPSFN) face and content validity.The final draft of the instrument was created after taking the validators' complaints and recommendations into account.

Reliability of the Instrument: Through the use of Cronbach's alpha to gauge the instrument's internal consistency, the instrument's reliability was determined. This produced dependability coefficients of 0.94 for fried rice preparation and packaging, 0.90 for water yam preparation and packaging, 0.92 for the creation of banana ice cream, 0.87 for cake preparation, 0.88 for canned tomatoes preparation, and 0.94 for the fabrication of spice mixture.

Method of Data Analysis:

The rating's mean (x) and standard deviation were calculated. The intra-class correlational approach was used to assess the level of inter-rater agreement. At the 0.05 level of significance, the analysis of covariance (ANCOVA), a generic linear model that combines ANOVA and regression, was employed to test the null hypotheses. The Statistical Package for the Social Sciences was used to conduct the analysis (SPSS). Regarding the mean (x) gain difference, the difference between the two mean (x) scores was utilized to determine if the two mean (x) values had changed in a positive or negative way.

Results

Research Question 1

What is the difference in pre-test and post-test mean ($\bar{x}$) scores of Foods and Nutrition Students who were exposed to problem-solving method in entrepreneurial skills acquisition in and their counterparts in the control group (lecture method)?

Table 1: Mean ($\bar{x}$) and Standard derivation of pre-test and post-test scores of Foods and Nutrition Students who were exposed to problem-solving method in entrepreneurial skills acquisition in and those exposed to lecture method.

Treatment group		Pre-test	Post-test	Mean ($\bar{x}$) difference
Problem-solving	Mean($\bar{x}$)	65.26	70.90	5.64
	N	70	70	
	Std. Deviation	7.330	8.891	
	Std. Error of Mean	.876	1.063	
	Variance	53.730	79.048	
Lecture method	Mean($\bar{x}$)	53.53	57.58	4.05
	N	100	100	
	Std. Deviation	6.232	5.817	
	Std. Error of Mean	.623	.582	
	Variance	38.837	33.842	
Total	Mean($\bar{x}$)	58.36	63.06	4.7
	N	170	170	
	Std. Deviation	8.843	9.764	
	Std. Error of Mean	.678	.749	
	Variance	78.196	95.327	

The results in Table 1 shows pre-test, post-test mean scores of Secondary School Students and mean ($\bar{x}$) difference scores based on their treatment groups. In terms of their mean ($\bar{x}$) scores based on problem-solving method, pre-test and post-test mean ($\bar{x}$) scores were 65.26 and 70.90 with a mean ($\bar{x}$) difference score of 5.64; those exposed to lecture method were 53.53 and 57.58 with a mean ($\bar{x}$) gain score of 4.05. Table 4.2 showed that Secondary School Students who were exposed to problem-solving method demonstrated more entrepreneurial skills in Foods and Nutrition compared to their counterparts exposed to lecture method.

Hypothesis 1

There is no significant difference between the pre-test and post-test mean ($\bar{x}$) scores of Foods and Nutrition Students who were exposed to problem-solving method in entrepreneurial skills acquisition and their counterparts in the control group (lecture method).

Table 2: One-way analysis of variance on pre-test and post-test mean ($\bar{x}$) scores of Secondary School Students in Anambra State who were exposed to problem-solving method in entrepreneurial skills acquisition in Foods and Nutrition and their counterparts in the control group (lecture method).

		Sum of Squares	df	Mean Square	F	Sig.
Pre-test	Between Groups	5662.830	1	5662.830	125.969	.000
	Within Groups	7552.281	168	44.954		
	Total	13215.112	169			
Post-test	Between Groups	7305.628	1	7305.628	139.397	.000
	Within Groups	8804.660	168	52.409		
	Total	16110.288	169			

There was a statistically significant difference between groups as determined by one-way ANOVA ($F(1, 168) = 125.969$, $p = 0.000$) for pre-test and ($F(1, 168) = 139.397$, $p = 0.000$) for post-test. Hence, the null hypothesis which states that "there is no significant difference between the pre-test and post-test mean ($\bar{x}$) scores of Secondary School Students who were exposed to problem-solving method in entrepreneurial skills acquisition in Foods and Nutrition and their counterparts in the control group (lecture method)" was rejected.

Discussion

This study's findings indicated that secondary school students who were exposed to problem-solving techniques developed greater entrepreneurial abilities in the area of foods and nutrition than their peers who were subjected to lecture-based instruction. The results were not unexpected because problem-based learning is a teaching and learning strategy that fosters learners' cognitive development. This finding is consistent with that of Molande *et al.,* (2017), who found that problem-based learning approaches aim to promote lifelong learning necessary for problem solving as students engage in complex problems that are presented to them instead of using rote memory techniques. Problem-solving instruction, according to Idris and Rajuddin (2012), is a key predictor of students' acquisition of abilities.

There was evidence of a significant difference in the mean score of secondary school students who were exposed to problem-solving techniques for acquiring entrepreneurial abilities in foods and nutrition and their counterparts in the control group between the pre-test and post-test (lecture method). Students who were taught Foods and Nutrition using the problem-solving method had a mean score higher than their counterparts who were not exposed to the method, according to the study, which supported Ada's (2005) observation that there is a significant relationship between the instructional strategies used by teachers and students' achievement. The results also back up Merlot's (2009) assertion that problem-solving methods force students to learn how to collaborate with others and look for solutions to issues that arise in real life. Similar research by Meintjes *et al.,* (2015) showed that practice interventions significantly improved learners' problem-solving and problem-recognition entrepreneurial abilities.

According to Igunnu and Gbadebo (2012), information may be imparted to enhance the nutritional composition through food-related problem-solving activities. The findings are in line with Kembe's (2014) explanation, which goes on to say that when kids are exposed to a variety of food and nutrition-related issues in the classroom, they will be able to apply the skills they learn to live a long and healthy life. As a result, students who have been exposed to problem-solving techniques are more equipped to work independently while being guided by a teacher until they have independently come to a clear grasp of the issue and are willing to accept responsibility than those who have not.

Conclusion

In conclusion, the problem-solving approach provides armful opportunity for Food and Nutrition students to learn by working on problems within the psychomotor domain. This enables the students to learn new knowledge by facing the problems to be solved. The students were able to observe, understand, analyze, interpret find solutions, and perform applications that lead to a holistic development of entrepreneurial skills. There was evidence of a significant difference in the mean (x) score of secondary school students who were exposed to problem-solving techniques for acquiring entrepreneurial abilities in foods and nutrition and their counterparts in the control group between the pre-test and post-test (lecture method). In other words, students who have been introduced to problem-solving techniques can work independently while being guided by a teacher until they have a firm grasp of the issue and are willing to take ownership. This study established that the problem-solving approach to education is more successful for teaching and learning than the conventional (lecture-based) approach. Therefore, problem-solving techniques should be used by food and nutrition teachers.

Recommendations

Government should change the food and nutrition textbooks to a problem-based learning format. Because typical textbooks do not adhere to problem-solving methodology, the secondary school food and nutrition instructors need extensive training, seminars, and workshops to use problem-solving techniques in the classroom. The establishment of the Food and Nutrition curriculum and practical courses in secondary schools should be funded via partnerships between educational institutions and industries.

Teachers should teach problem-solving skills in the context in which they will be used through the deployment of real-life problems in explanations, examples, and exams. Teachers should take enough time when planning a tutorial, this will help in understanding the problem and defining the goal, both individually and as a class.

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Conflict of Interest

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