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VYTAUTO DIDŽIOJO UNIVERSITETO ŠVIETIMO AKADEMIJA

Guided Discovery Instructional Strategy and Students' Attainment in Financial Accounting Concepts

Wale-Fadairo Taiwo[1], *Olugbenga A IGE[2]

[1] Adekunle Ajasin University, Department of Social Science Education, P.M.B. 001, Akungba Akoko, Nigeria https://orcid.org/0000-0002-8588-0662, oluwanifemi4krist@gmail.com

[2] The Papua New Guinea National Research Institute (PNG NRI), Boroko, Port Moresby, National Capital District 111, Papua New Guinea, https://orcid.org/0000-0002-6505-2114, Olugbenga.Ige@pngnri.org (*corresponding author)

Annotation. This research examined the efficacies of guided discovery and lecture method on the academic attainment of students in Financial Accounting concepts. The non-randomized pre-test, post-test, control group quasi-experimental design was adopted, while the intervening variables of gender were varied as male and female, and socio-economic status at high, middle, and low levels. This study presents the teaching prospects of guided discovery instructional strategy for improving students' academic attainment in Financial Accounting.

Keywords: *instructional strategy, guided discovery, students' academic attainment, gender, socio-economic status, quasi-experimental design.*

Introduction

Financial Accounting, one of the vocational subjects offered at the senior secondary level to provide learners with marketable skills and competences for self reliance, was included in the senior secondary school curriculum to ensure learners comprehend basic accounting concepts and principles, and its applications to business activities (National Examination Council (NECO), 2002). American Institute of Certified Public Accountants (AICPA), cited in Glautier, et al. (2011), defined Financial Accounting as the art of recording, classifying and summarizing, in monetary terms and a noteworthy manner,

events and transaction which are of a financial character and interpretation of results. This definition is shared by Azih and Nwosu (2011) who opinionated that the field is also concerned with the assemblage, registering, summarizing, scrutinizing, and reporting, in monetary terms, the details of business organizations to the users of such information.

Aluwong (2002) affirmed that the provision of concrete basis for the training of upcoming accountants, entrepreneurs and managers makes Financial Accounting integral to the Nigerian economy. Despite its importance to individuals and the society at large, efforts channelled towards the advancement, teaching and learning of the subject to improve students' attainment in Financial Accounting has remained unsatisfactory at both internal and external examination levels (Ezeugwu et al., 2016; Inuwa et al., 2017; 2018; Nwaukwa, & Okolocha, 2020). Yusuff (2015) articulated that poor academic attainment, as one of the challenges facing Financial Accounting, could be linked to the ways Financial Accounting instructions, teaching and learning have been delivered. Like Okon (2002) is of the opinion that conventional methods of teaching are inadequate to effectively teach and inculcate Accounting concepts, knowledge, skills and attitude in students. The conventional instructive practice's cramped-methods of conveying knowledge to learners, through telling, reading and rote learning (Kohle, 2002), have not been effective in impacting Financial Accounting skills needed for all round development. There is, therefore, the need to seek an opposite instructive strategy for delivering Financial Accounting instructions to enhance students' high academic attainment.

Bamiro (2015) opined that the process of delivering instructions consists of pre-instructional, instructional, and post-instructional stages. The critic further specified that these instructional stages involve plans and designs for implementing learning activities. At this point, the instructional strategy adopted by the teacher primarily determines students' academic attainment, attitude to the subject, and involvement in learning activities (Alebiosu, 1998; Adeyemi, 2002; Bilesanmi-Awoderu, 2006; Bamiro, 2015). According to Bamiro (2015), students learn best when they are fully interested in what they are doing. The ability to see and substantiate their own assumptions with experiment and draw inferences, by themselves, on the potency of confirmation they have gathered is important to clear confusion and enhance adequate learning (Bamiro, 2015). This instructive concept should be participatory through social interface, oneness, and activity-oriented communication (Ajiboye & Ajitoni, 2008). A Guided discovery instructional strategy is one of these instructive concepts. Scholarly evidences suggested that guided discovery strategy is advantageous to students' academic attainment (Hake, 2002 in Bamiro, 2015). It is in the light of this that the study tends to investigate the efficacy of guided discovery in advancing academic attainment of students in Financial Accounting.

Guided Discovery Instructional Strategy and Students' Attainment

Guided discovery, a learning model (Simamora, 2019) that adopts a discovery-oriented learning model of a constructivist characteristic, occurs in problem solving circumstances

where learners learn via prior experience and accessible knowledge, and to uncover facts and associations with new concept under study (Bruner, 1961; David, 2017). In this instructional strategy, students take active participation in the learning activity and also have utmost measure of self-autonomy. Hernandez et al. (2011) are of the opinion that guided discovery strategy has the potential to make learners gain knowledge of various problem-solving stratagems, convey intellectual information in a more functional way, and have the ability to instigate learning. Guided discovery is an instructional strategy that assists students in reorganizing or revamping existing information to create innovative concepts or principles (De Smet et al., 2012).

Students, in guided discovery learning, are structured to enthusiastically and independently participate in the educative process (Bamiro, 2015). This learning model facilitates teacher's provision of a prospect for students to become decipher of problems (Kementerian Pendidikan dan Kebudayaan, 2014). Simamora et al. (2019) opined that this instructional model advances learners' aptitude in innovation, investigation, problem solving, autonomous thoughts, formation, and detection via ingenious learning. Research has shown that in guided discovery, learners can actively and positively participate in learning, integrate and construct personalised knowledge (Shieh & Yu, 2016; Simamora et al., 2019)). Several scholars have supported the effectiveness of this instructional model. Among them, Bamiro (2015) and Omiko (2017), in their independent studies, proved the effectiveness of the guided discovery instructional strategy over the conventional lecture method in enhancing students' academic attainment in chemistry.

Gender, Socio-economic Status, and Students' Attainment

Lee (2001) opined that gender is an attributed feature that makes a distinction between a man and a woman. Like Lee et al. (2016) emphasized that gender is an array of uniqueness used to make a distinction amid male and female, and a trait allotted to masculine and feminine, men, and women. Gender-based disparity in academic attainment is fundamental to scholars in education. Eraikhuemen (2003), Olorode and Jimoh (2016), and Bamidele and Ariyo (2017) reported significant distinctions in the academic attainment of students in Mathematics, Financial Accounting, and Chemistry respectively across gender lines in their separate studies. In line with this finding, Ukwungwu (2001) revealed that male students had superior attainment in physics, and Kyei and Apam (2011) found that male students were performing better than the female students in senior high school Mathematics examination in the Upper East region of Ghana. More so, Sam (2016) reported that male students taking Financial Accounting performed better than female students. Conversely, Wally-Dima and Mbekomize (2010) found that female students outperformed males in Financial Accounting examinations. However, Bamiro (2015) reported that there exist no significant differences in the academic attainment of male and female students in Chemistry. It is in the light of the foregoing that this research examines gender discrepancy in Financial Accounting attainment.

On the other hand, academic attainment in relation to socio-economic status will also be examined in this study. Socio-economic status is a variable that plays an imperative function in teaching and learning. Gouc (2007) in Dahie et.al. (2016), is of the opinion that socio-economic status is the comparative status of a family in a society on the basis of its income, influence, background and reputation. Ovansa (2017) indicated that students from low socio-economic status (SES) family and society develop academic expertise more slowly compared to students from higher socio-economic status home. In addition, Tina (2001) and Ebong (2004) reported in their different studies that students from the high socio-economic status are found to perform higher than the students from the middle and low socio-economic status. In the light of these reports, it is, therefore, becomes crucial to examine further the feasible effects of instructional strategies on students' attainment in Financial Accounting concepts. The interactional effects of the experimental instructional strategy were also determined in this research.

Research Questions

In this discourse, the following questions will be answered by the researchers:

1. Is there any significant effect of the Guided Discovery Instructional Strategy on students' attainment in Financial Accounting concepts.
2. There is no major gender-significant effect on students' attainment in Financial Accounting concepts.
3. There is no significant effect of SES on academic attainment of students in Financial Accounting concepts.
4. Is there any significant two-way interaction effect of gender and treatment on students' attainment in Financial Accounting concepts.
5. There two-way interaction effect of treatment and socio-economic status on students' attainment in Financial Accounting concepts will not be significant.

Methods

Research Design. The quasi-experimental research design (Ige & Hlalele, 2017; Ige, 2018a; Ige, 2018b; Ige, 2019) was adopted to determine the effects of the Guided Discovery Instructional Strategy and Conventional Lecture Method on the criterion of students' attainment in this research. Specifically, this study adopted the non randomized pretest-posttest control group design (Ige & Hlalele, 2017; Ige, 2018a; Ige, 2018b; Ige, 2019). The design is presented in a schematic diagram below:

$A_1\ X_1\ A_3$ _____ Experimental Group

$A_2\ X_2\ A_4$ _____ Control Group

Where A_1 and A_2 are pre-test of experimental group and control group, respectively. A_3 and A_4 represent the post-test of experimental group and control group respectively.

X_1 – Guided Discovery Instructional Strategy
X_2 – Conventional Lecture Method

Participants' Selection and Sample. The population comprised all the SS2 students offering Financial Accounting in Ondo North Senatorial District of Ondo State, Nigeria. One hundred and forty-seven (147) students were purposely selected from this population to engage in this study. The selected students were readily available to participate in the study. Eight intact senior secondary school II classes in each of the eight secondary schools were selected. Four schools were assigned to a guided discovery instructional strategy (63 students) and the other four schools to a conventional strategy (84 students). The selected schools were identified using the following criteria:

i. The schools were public co-educational schools.

ii. The schools were offering Financial Accounting as a business subject, and were also accredited by national and regional examination bodies.

iii. The schools were easily accessible.

Instrumentation. In this research, three instruments were utilized:

1. The Financial Accounting Attainment Test (FAAT).
2. Teachers' Instructional Guide for Guided Discovery Instructional Strategy (TIGGDIS).
3. Teachers' Instructional Guide for the Conventional Lecture Method (TIGCLM).

The TIGGDIS and TIGCLM were designed by the researchers as a guide to teachers in experimental and control group respectively. The instructional guide was reviewed and validated by experts in Business Education (Accounting Option) at a national university in Nigeria. The experts' reviews and comments were used to improve the instruments. The FAAT consists of two sections. The first section sought for the respondent's personal data such as gender, class, name of school, parents' educational qualification, parents' occupation, and income per month, while the second contained 30 adapted multiple-choice questions from the WASSCE past questions. Depreciation of fixed asset, manufacturing accounts and accounts for non-profit making organizations were the content area of the FAAT. FAAT reliability yielded 0.83 using Kuder–Richardson Formula 21 (KR-21). It is applicable when each question is either right or wrong; and where a correct question scores 1 and an incorrect question scores 0.

Procedure. The treatment and data collection procedure were divided into four main phases and lasted for eight weeks. The 1st week was for training of research assistant; the 2nd week, for the administration of pre-test; 3rd 7th week, for the application of treatment to experimental and control group; and the 8th week for the administration of post-test. The students were taught once a week for five weeks, in a time-total of 80 minutes per week. In the eighth week, the subjects took the post-test under the supervision of their class teachers.

Students in the experimental group were exposed to a guided discovery strategy through the following steps: first, the teacher introduced Accounting topics to set the learning pace for students; second, generated and modelled students' ideas through Financial Accounting questions, illustrations and activities; third, encouraged accounting students to explore varieties of learning materials to discover facts and more knowledge about Financial Accounting concepts and content; fourth, encouraged financial accounting students to share exploratory work with each other; fifth, engaged accounting students in thinking through and practicing illustrations, questions, and activities; sixth, summarized the lesson; seventh, evaluated the students; and lastly, gave them assignment to work on. The students in the control group were exposed to the conventional lecture method through the following steps: the teacher, first, presented the lesson in form of lecture; second, made students listen to explanation on the topic; third, instructed them to write summaries in the form of note from the chalkboard; fourth, answered students' questions on areas of the topic that were not clear to them; fifth, summarized the lesson; sixth, evaluated the students; and lastly, gave them take-home assignment.

Data Analysis. The data analysis was completed using Statistical Package for Social Sciences (SPSS). Descriptive statistics such as Mean and Standard Deviation were utilized to show that the performance of students in the experimental group cuts across gender and socio-economic status. The hypotheses were tested at a significant level of 0.05, through the use of Analysis of Covariance's (ANCOVA) inferential statistics. ANCOVA was preferred because of its tendency to take care of the initial lack of equivalence in the groups since intact classes were used for the study (Ali, 1996 in Ogundola, 2017). Also, Estimated Marginal Means (EMM) were used to determine the magnitude and direction of the differences among the groups with significant effect. Bonferroni post hoc analysis was further used to establish the source of significant differences where it existed.

Results

The analysed data were observed, based on guided discovery learning strategy and the significant level of each construct, to determine students' attainment in Financial Accounting concepts, with respect to gender and socio-economic status.

Table 1

Treatments, Gender and SES on Subjects' Attainment in Financial Accounting Concepts Dependent Variable: Post Student Attainment

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	5078.575[a]	12	423.215	379.180	.000	.971
Intercept	320.596	1	320.596	287.239	.000	.682
Pretest	68.913	1	68.913	61.743	.000	.315
Treatment	1033.096	1	1033.096	925.606	.000	.874
Gender	3.336	1	3.336	2.989	.086	.022
SES	2.245	2	1.122	1.006	.369	.015
Treatment*Gender	3.712	1	3.712	3.326	.070	.024
Treatment*SES	.194	2	.097	.087	.917	.001
Gender*SES	2.365	2	1.183	1.060	.349	.016
Treatment*Gender*SES	.275	2	.137	.123	.884	.002
Error	149.561	134	1.116			
Total	61496.000	147				
Corrected Total	5228.136	146				

R Squared = .971 (Adjusted R Squared = .969)

Table 1 shows a significant main effect of the treatment on senior secondary students' attainment in Financial Accounting concepts ($F_{(1,134)} = 925.606$; $p < 0.05$; $\eta^2 = .874$). The effect size is 87%, which implies that 87% of the variance in the experimental variable is attributed to the independent variable. The ANCOVA output shows a significant difference in the attainment of students exposed to guided discovery instructional strategy and the conventional lecture method. The hypothesis is therefore rejected. The determination of the magnitude of the significant main effect across treatment groups was subjected to estimated marginal means, presented in Table 2.

Table 2

Estimated Marginal Means for Post-Student Attainment by Treatment

Treatment	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
Guided Discovery (GD)	25.112[a]	.201	24.714	25.511
Conventional lecture method	15.391a	.164	15.066	15.716

a. Covariates appearing in the model are evaluated at the following values: PRETEST = 10.7959.

Table 2 reports that students taught with the guided discovery instructional strategy performed better ($\bar{x} = 25.11$) than those in the control group ($\bar{x} = 15.39$). This order is

represented as GDIS > CLM. Further, the source of the significant difference obtained was determined using Bonferroni post-hoc test.

The Bonferroni Post-hoc Analysis of Post-Student Attainment Test by treatment shows a difference in the values reported for GDIS and CLM. This, therefore, means that GDIS was significantly more effective than CLM.

Gender and Students' Attainment in Financial Accounting Concepts

Table 1 shows gender had no significant main effect on students' attainment in Financial Accounting concepts $F_{(1,134)} = 2.989$, $p > 0.05$; $\eta^2 = .022$). Therefore, the null hypothesis is not rejected. This implies that there was no significant difference in the post attainment test scores of the male and female students. It portrays that the efficacies of the instructional strategies were not influenced by the students' gender.

Socio-economic Status and Students' Attainment in Financial Accounting Concepts

Table 1 also reveals the non-existence of a statistically significant effect of SES on academic attainment of students in Financial Accounting concepts $F_{(2,134)} = 1.006$, $p < 0.05$; $\eta^2 = .015$). Therefore, the null hypothesis is not rejected. This implies that the significant difference in the post attainment test scores of the students based on their SES was not significant. It also highlights that the efficacies of the instructional strategies were not influenced by the students' socio-economic status.

Treatment, Gender, and Students' Attainment in Financial Accounting Concepts

Also, table 1 indicates there was no significant two-way interaction effect of gender and treatment on students' attainment in Financial Accounting concepts ($F_{(1,134)} = 3.326$, $p > 0.05$ $\eta^2 = 0.24$). This implies that treatment and gender had no significant interaction effect on students' attainment in Financial Accounting concepts. Hence, the null hypothesis was therefore not rejected.

Treatment, SES and Students' Attainment in Financial Accounting Concepts

Furthermore, table 1 shows the two-way interaction effect of treatment and socio-economic status on students' attainment in Financial Accounting concepts was not significant ($F_{(2,134)} = 0.087$, $p < 0.05$ $\eta^2 = 0.01$). This implies that treatment and socio-economic status had no significant interaction effect on students' attainment in Financial Accounting concepts. Hence, the null hypothesis was therefore not rejected. It proves that the interplay of treatment students is exposed to and their parents' SES had no effect on students' attainment in Financial Accounting concepts.

Discussion

This study investigated the efficacy of the guided discovery instructional strategy in improving students' attainment in Financial Accounting concepts compared to the conventional lecture method. The first strand of analysis was the main effect of treatment (instructional strategies) on the attainment of students that took part in the study on the Financial Accounting concepts, selected from the Financial Accounting syllabus. The selected students' attainment in Financial Accounting concepts improved after exposure to the treatments provided in the experimental group. Meanwhile, the participants exposed to the guided discovery instructional strategy experienced greater improvement in their knowledge of Financial Accounting concepts. This outcome illustrated guided discovery's effectiveness on subjects' academic attainment in selected concepts in Financial Accounting. The efficiency of the guided discovery instructional strategy could be attributed to the fact that students participate actively at every stage of the model. The strategy allowed students to think and discover fact that will enable them to provide solution to Financial Accounting problems on their own, which may be difficult to do in a traditional learning environment. This presented guided discovery as an instructional strategy that assists students in reorganising or revamping existing information to create innovative concepts or principles (De Smet et al., 2012).

Similarly, Olorode (2016) affirmed that the guided discovery strategy is an instructional method that emphasizes students' active involvement in the learning process through peer work, and enables students to think together with a view to discovering knowledge under the guidance of the teacher, especially in calculation subjects like financial accounting. Furthermore, Simamora et al. (2019) opined that this instructional model advances learners' aptitude in innovation, investigation, problem solving, autonomous thoughts, formation, and detection via ingenious learning. This finding is supported by the findings of Bamidele and Ariyo (2017), Omiko (2017), Bamiro (2015), Udo (2011), and Ajewole (2008) who, in their separate studies, reported that learners exposed to guided discovery instructional strategy were better than learners taught with conventional lecture method in Chemistry, Redox Action and Biology. It also affirmed Umar and Abdulmutallib's (2017) and Olorode and Jimoh's (2016) findings that reported guided discovery was better than the traditional lecture method in fostering students' learning outcomes in Financial Accounting.

The gender influence on the attainment of the participants in Financial Accounting concepts, reported in Table 1, was not significant. The outcomes of the data analysed in this study showed that the mean attainment scores of male and female students in Financial Accounting concepts were not significant. This finding is in harmony with the outcome of a research conducted by Ige and Hlalele (2017) which affirmed that gender did not influence students' academic attainment in Citizenship Education concepts. It also conformed to the findings of Chinwuba and Osamuyimen (2011), Ezenwosu and

Nworgu (2013), Dania (2014), Bamiro (2015), Abdullahi (2016) and AbdulRaheem et al., (2017) who found, in their respective works, that gender had no significant main effect on participants' attainment in Accounting, Biology, Social Studies, Mathematics, and Economics.

The influence of gender on the academic attainment of students in Financial Accounting concepts observed in this study implies that guided discovery instructional strategy is advantageous for teaching both male and female students, that is, it is not gender-based or biased. Howbeit, this finding contradicted the outcome of some studies, of which among them are Eraikhuemen (2003), Olorode and Jimoh (2016), Bamidele and Ariyo (2017) and Ige (2019), which affirmed that gender had influence on students' academic attainment in Mathematics, Financial Accounting, Chemistry, Social Studies and ICT concepts respectively. In the same vein, table 1 also revealed that socio-economic status had no significant main effect on the attainment of the participants in Financial Accounting concepts. The product of the data analyzed in this study reported no significant difference in the mean attainment scores of students with low, middle and high SES in Financial Accounting concepts. The finding also disagreed with Ebong (2004) and Tina (2001) who, in their distinct studies, reported that students of high socio-economic status are found to perform higher than those of middle and low socio-economic status. This projects the fact that students' socio-economic status does not influence students' academic attainment.

In furtherance, students' gender and treatment do not significantly influence students' attainment in Financial Accounting concepts. This means that the guided discovery instructional strategy is not gender-biased, as it offers equal opportunity to both male and female. This finding confirmed the discoveries of Olorode and Jimoh (2016) and Ezinwa (2003) which established that no significant interaction effect of instructional strategies and gender on students' attainment in Financial Accounting and quantitative analysis respectively. This indicates that relative efficacy of guided discovery was consistent across gender groups. However, the finding negated the findings of Anyichie and Onyedike (2012) that reported an interaction effect between learning strategy and gender on subjects' attainment in Mathematics and Algebra. As regards treatment and socio-economic status, the interaction effect on students' attainment in Financial Accounting concepts was insignificant. This finding agreed with Edinyang, Ubi, Usang and Adalikwu's (2013) outcome which summed up that no significant interaction effect of treatment and socio-economic status on students' attainment and retention in Social Studies. This highlights that the interplay of treatments students is exposed to, and their parents' SES had no effect on their attainment in Financial Accounting concepts.

Conclusions

This study conducts experiment on the efficacy of guided discovery instructional strategy in improving students' attainment in Financial Accounting concepts. The Guided Discovery instructional strategy is an instructional model that gives students opportunity to actively participate in learning, and makes them think and discover fact that will enable them to provide solution to Financial Accounting problems on their own. It gives students the opportunity to do that, which may be difficult in a passive traditional learning environment that facilitates poor memory and poor academic attainment in Financial Accounting, since students look up, ultimately, to their teachers for knowledge. The study demonstrates that the guided discovery as a learning strategy positively improves students' attainment. Also, findings show that students' gender and socio-economic status had no interactive effect with treatment on students' academic attainment in Financial Accounting concepts.

Consequently, the study proposes that the government should encourage educational administrators, curriculum designers, and post-basic school teachers to adopt guided discovery as teaching cum learning strategy for delivering Financial Accounting instructions in secondary schools to advance students' attainment in the subject. Also, educational administrators should fully support the implementation by rendering ample knowledge, awareness, skills, competence, and training to the teachers in order to become conversant with the guided discovery instructional strategy. Furthermore, co-educational schools should employ guided discovery in giving equal instructions to both male and female students because of the strategy's gender-friendly nature. Lastly, researchers should exercise caution in generalizing the outcomes of this research, since it is limited to the study of senior secondary school students' (year two) attainment in selected Financial Accounting concepts.

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Mokomoji strategija „Vadovaujamas atradimas" ir mokinių pasiekimai mokant finansinės apskaitos sąvokų

Wale-Fadairo Taiwo[1], *Olugbenga A IGE[2]

[1] Adekunle Ajasin universitetas, Socialinių mokslų edukologijos katedra, P.M.B. 001, Akungba Akoko, Nigerija, https://orcid.org/0000-0002-8588-0662, oluwanifemi4krist@gmail.com

[2] Papua Naujosios Gvinėjos nacionalinis mokslinių tyrimų institutas, pašto dėžutė 5854, Boroko, Port Morsbis, Papua Naujoji Gvinėja, https://orcid.org/0000-0002-6505-2114, Olugbenga.Ige@pngnri.org' (*autorius (-ė))

Santrauka

Šiame tyrime nagrinėjamas vadovaujamas atradimas, skirtas gerinti vyresniųjų klasių mokinių akademinius pasiekimus, susijusius su finansinės apskaitos sąvokomis. Tyrėjų patikrintas kvazieksperimentinis planas buvo pritaikytas eksperimentinei mokymo programai (t. y. vadovaujamam atradimui (angl. *guided discovery*)), kurią tyrėjai išbandė su įprastiniu dėstymo metodu: jį taikė apskaitos mokytojai, mokę atrinktus 147 mokinius patvirtintų valandų metu mokyklose nacionaliniu mastu. Surinkti duomenys buvo analizuojami naudojant kovariacijos ir įvertintų ribinių vidurkių analizę, o Bonferroni testas buvo naudojamas kaip post hoc priemonė. Šio tyrimo rezultatai patvirtino, kad vyresniųjų klasių mokiniai,

kurie buvo mokomi taikant vadovaujamo atradimo mokymo strategiją, pasiekė reikšmingai aukštesnius vidutinius rezultatus po testo nei mokiniai, kurie buvo mokomi dėstymo metodu ($F(1,134) = 925,606$; $p < 0,05$; $\eta 2 = ,874$). Šiame moksliniame straipsnyje pateikiamos gairės apskaitos mokytojams, kurie, atsižvelgdami į sunkumus, su kuriais susiduriama per valstybinius egzaminus dėl matematinio finansų apskaitos mokymo programos pobūdžio įvairiose pasaulio šalyse, ieško mokymo strategijų, kaip pagerinti besimokančiųjų akademinius pasiekimus.

Esminiai žodžiai: *mokymo strategija, vadovaujamas atradimas, mokinių akademiniai pasiekimai, lytis, socialinis ir ekonominis statusas, kvazieksperimentinis modelis.*

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