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Do Learning Styles Affect the Accounting Students' Performance in the Financial Management Online Courses?

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Abstract: This study aimed to figure out whether learning styles affected the accounting students' performance in the Financial Management online courses. This study was considered as experimental research using two groups of accounting students joining the Financial Management courses: one group attended online classroom, and the other group attended face-to-face classroom. Their learning styles were identified using the model of Fleming and Mills (1992). The student performance was measured using the final quiz scores. The accounting students with visual learning styles show no different performance in the face-to-face and online classrooms. Accounting students with auditory and kinesthetic learning styles show lower performance in the online classroom. Based on the results, the accounting programs and accounting lecturers should consider other teaching methods in teaching the financial courses to accommodate both auditory and kinesthetic learners. However, the accounting students' performance in this study was only measured using the final quiz scores. Further research is needed to use more comprehensive performance measurements.

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INTRODUCTION

The Covid-19 pandemic has triggered tremendous changes in education. There are vast and massive shifts from offline to online learning. The pandemic has accelerated the transformation of traditional to online classrooms. Before the pandemic began, online learning actually had increased from year to year (Sanford, 2017), yet slower. Due to the outbreak of Covid-19 pandemic, massive online learning is inevitable. Most courses offered at higher education institutions were delivered online. This massive switch has triggered a rather classical question, whether online learning is as effective as face-to-face learning? Another compelling question is whether all students receive similar benefits from online learning or only some particular students obtain the most benefit.

Many studies on the effectiveness of online learning have been conducted. However, research on the effectiveness of online learning in accounting fields is still relatively rare. Kumar, Kumar, Palvia, and Verma (2019) examined the articles taken from 23 journals within the period of 2008 to 2016. They only found one in the accounting field and one in the financial field. The research related to the accounting field was conducted by McCarthy, Kusaila, and Grasso (2019). The related research examined the effectiveness of online, hybrid, and face-to-face learning in the Intermediate Accounting and Auditing courses.

However, no research examines whether learning online useful for all students or only some students with specific learning styles. This topic is crucial because if the related online learning method only benefits some students, it will be greatly necessary to modify the online learning method to benefit all students. It is widely known that each student or learner has a specific learning style. Fleming and Mills (1992) classify learning styles into three: visual, kinesthetic, and auditory. The purpose of this research was to examine whether those three types of learners will have the same performance level in both online and face-to-face learning.

This research is expected to provide contribution in several aspects. First, this research examines whether learning styles will moderate the effectiveness of online learning. The online learning used in this research is considered as asynchronous online learning with video recordings. If learning styles affect the effectiveness of online learning, the universities should adjust the online learning methods to accommodate different students. Moreover, this research is expected to provide contribution by adding more findings on the effectiveness of online learning in the accounting fields which is still relatively rare.

This research used the third-semester students joining Financial Management 1 course as the samples. This research chose Financial Management 1 because this course was a non-accounting subject closely related to many accounting courses. The knowledge on Financial Management is critical for accountants to calculate the value of balance, use, present debt, etc.

LITERATURE REVIEW AND HYPOTHESES

Learning styles

Learning style has become controversial over the years. Learning style is not a skill but way of using skill. Each individual has different learning styles to acquire, interpret, and maintain new knowledge and skills (Hatami, 2012). The word “learning style” refers to the idea that each individual has various and most appropriate instructional or learning models for themselves (Pashler, McDaniel, Rohrer, & Bjork, 2008).

There are various learning style models. Some of the most popular learning style models are Kolb’s Learning Style Inventory, Honey and Mumford’s Learning Style Questionnaire, Dunn and Dunn’s learning style model, and Fleming and Mills’ learning style model (Pashler et al., 2008). Fleming and Mills’ learning style model is the most popular one. Based on Fleming and Mills (1992), there are three learning styles: visual, kinesthetic, and auditory. Fleming’s models are frequently referred to as VAK Learning Style.

Visual learners are mostly comfortable with photos, images, and graphics when learning to retain knowledge or information. Auditory learners understand better when listening to information or lectures. Thus, the learners need to orally communicate when learning to overcome problems and discuss the content of learning materials in the classroom. Kinesthetic learners enjoy dynamic participation experiences, such as drama, role-playing, or moving around. These students benefit the best from their experience and physical activities in the classroom, such as stimulus combination, audiotape-activity combination which possibly help the learners understand the related learning materials (Jamulia, 2018).

A learner can have multiple learning styles. For example, visual-auditory, visual-kinesthetic, auditory-kinesthetic, or visual-auditory-kinesthetic learner. Thus, this VAK learning style is presented in a Venn diagram shown in Figure 1.

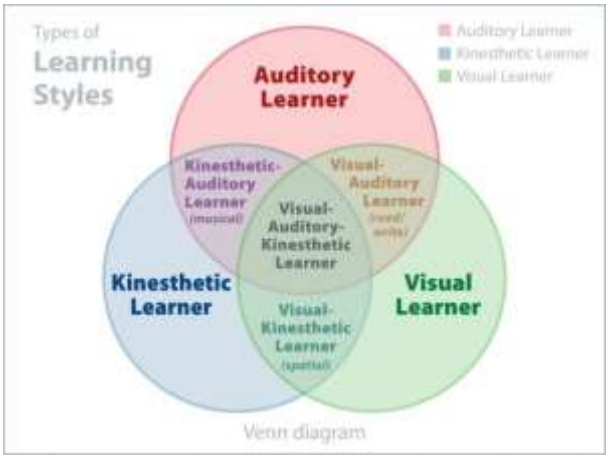

Figure 1: Learning Style Venn Diagram (Jarrett, 2018)

Perna (2011) found that students with specific learning styles learn differently from the others and lead to different performances. The students perform better if the learning methods used in class are close to their preferred learning styles. These findings are in line with the results of research conducted by Sarabdeen (2013), who also stated that each learner has different preferences. The trainers, then, should customize their training programs and methods to maximize the outcomes. Awla (2014) also found that learning styles contribute an essential part in the learners' life. If the students understand their learning styles, they will be able to incorporate them with their learning processes. Thus, the learning processes would be enjoyable, faster, and more effective. In addition, the teachers should strive to adapt their instructional methods to meet the students' learning styles.

Online Learning Effectiveness

Several previous studies have been conducted to examine the effectiveness of online learning. The results were various. McCarthy et al. (2019) examined the impact of learning models on student performance in the Intermediate Financial Accounting and Auditing courses in the United States. The study found that there were no superior learning models. The students showed similar performance in those three instructional models (face-to-face, blended, and online). Similar results can also be found in Nguyen (2015) and Ni (2013). Nguyen (2015) found that online learning was as effective as face-to-face learning. Ni (2013) also found that student performance was not influenced by instructional models (online or face-to-face).

Fadol, Aldamen, and Saadullah (2018) used a comparative analysis to examine the effectiveness of online, flipped learning, and traditional learning in Qatar. The study found that online learning and flipped learning show better results than those of traditional learning. The strongest performance was found in students who participated in flipped learning. They argued that students joining the online and flipped learning showed stronger performance since they could access the online materials. This access increased student performance in both online and flipped learning.

Sanford (2017) examined the impact of learning models on student performance by using overall academic performance (GPA) as the moderating variable. This research found that students joining the face-to-face classrooms showed stronger performance than those joining the online classrooms. Similar results was also be found by Sohn and Romal (2015). They conducted a meta-analysis to examine the effectiveness of online learning based on prior research. Their study found that students joining the face-to-face classrooms showed stronger performance than those joining online learning.

Students' Characteristics

The previous studies used various control variables. Asarta and Schmidt (2020) employed several variables, such as GPA, math quiz score, total credits taken in the related semester, attendance rate, percentage of materials accessed by the students, number of transfer credits, and nline learning experience. McCarthy et al. (2019) used control variables, such as full-time/part-time status, number of transfer credits, total earned credits, GPA at the beginning of semester, gender, age, and ethnicity. Sanford (2017) used the other control variables, such as major, gender, age, shortened course format, elapsed time between course and test, online experience, and faculty effect.

This study selected control variables based on two criteria: (1) the significance of control variables in the previous research and (2) the relevance of control variables with the samples. Control variables proven insignificant including online learning experience (Asarta & Schmidt, 2020), were omitted. Some control variables were not relevant to the samples, such as full-time status and number of transfer credits. All students took all credits at one university, and were full-time students. Thus, this research employed some control variables, such as GPA at the beginning of semester, number of credits taken in the related semester, gender, and age.

Accounting Students' Performance in Online Classroom and Face-To-Face Classroom

The first research question is, "Does learning style affect student performance?" The previous research showed various and inconclusive findings related to student performance in online and face-to-face class. McCarthy et al. (2019) found that the students attending online, blended, and face-to-face learning had similar results. Fadol et al. (2018) found the opposite results. The students participating in online courses and flipped learning had better results than those participating in traditional classrooms. On the other side, Sanford (2017) found that students in face-to-face classroom showed better performance than those participating in online classroom. The results were supported by the other study conducted by Sohn and Romal (2015) who used meta-analysis from 9 previous studies and found that students participating in face-to-face classrooms had better performance than those participating in online learners. Thus, this study proposed the following hypothesis:

H_1: Students in face-to-face learning have better performance than those in online learning

The Effect of Learning Styles on Accounting Students' Performance

The second research question is "Does students' learning style affect student performance in online learning?". The previous studies had not considered the effect of learning styles on online learning effectiveness. However, some previous studies had examined the effect of learning styles on face-to-face learning effectiveness, such as Perna (2011), Sarabdeen (2013), and Awla (2014). Those studies showed that each learner had different learning styles, while learning style affected learning effectiveness. They also suggested trainers, tutors, and lecturers to use learning methods meeting the learners' learning preferences.

The impact of learning styles on online learning effectiveness had not been considered in the previous studies. However, trainers, tutors, and lecturers will use one method when delivering the materials to all students. Using one method will benefit some students with specific learning styles and hamper the other students with other learning styles. The teaching method employed in this research is asynchronous learning video. The students in online classroom learned the materials by watching the pre-recorded videos delivered by the lecturers. The students can also participate in forums for question-and-answer session with the other students and lecturers. The students also needed to complete the assignments given by the lecturers.

The asynchronous video learning model is expected to provide the most benefit for visual learners since visual learners are mostly comfortable with photos, images, pictures, and graphics to learn, research, and obtain knowledge or information (Jamulia, 2018). Thus, visual learners will acquire materials

delivered through pre-recorded videos and materials delivered in the face-to-face classroom. Thus, this study proposed the following hypothesis:

H_{2a}: The performance of visual learners in online class is not different from that of visual learners in face-to-face class

On the other hand, auditory learners tend to express their ideas orally/verbally, solve problems through forums and discuss the content of learning materials in the class (Jamulia, 2018). In a classroom using asynchronous video model, the auditory learners are unable to convey their verbal understanding. Verbal discussion with the other students is also only minimum since most discussions are conducted through online forums. This method does meet the needs of auditory learners' learning preference. Thus, online learning is considered having a negative effect on student performance with auditory learning styles. Thus, this study proposed the following hypothesis:

H_{2b}: The performance of auditory learners in online class is lower than that in a face-to-face class

Some others are kinesthetic learners who prefer active participation experiences, for example, drama, role-play, or moving around. They learn best by physically experiencing and involving in classrooms (Jamulia, 2018). When learning materials use asynchronous video model, kinesthetic learners will not gain the most appropriate learning experience. Kinesthetic learners do not physically engage in learning processes. This is quite different from face-to-face learning which does not enable the kinesthetic learners to use drama or role-play. Online learning has provided learning experience not meeting the kinesthetic learners' preference. Thus, kinesthetic learners in online classrooms had lower performance than in face-to-face classrooms. Thus, this study proposed the following hypothesis:

H_{2c}: The performance of kinesthetic learners in online class is lower than that in a face-to-face class

METHODS

Course Design and Sample Data

This research was conducted using an experimental method in two classes of Financial Management 1. These two classes were taught by the same lecturer. These classes were held in the odd semester of the academic year 2019/2020. The Financial Management 1 course covered the following materials: the role of financial management, financial management environment, basic financial statement analysis, The Time Value of Money, the basic valuation concept of long-term securities, risk and return, overview of working capital management, as well as management of cash and marketable securities.

There were 50 students in each class. Those taking Financial Management 1 were mostly from the third-semester or second-year students. Both classes experienced different learning methods. The students in face-to-face class learned in a classroom, while those in online class learned using pre-recorded videos. The assessments used in face-to-face classroom is also different from those used in online classroom. There was no mid exam and final exam conducted in online class. Table 1 summarizes the course deliveries and assessments from each class.

Since the assessments given to both classes were different, the final marks could not be used as proxy in this research. This research used the final quiz as the proxy for student performance as the dependent variable. The quiz was conducted in the final session. The quiz consisted of 50 multiple-choice questions covering all materials from the first until the last session.

Table 1. Course Deliveries and Assessments: Face-to-Face and Online

	Face-to-face	Online
Course delivery	Duration: 14 weeks Class meets once a week for 150 minutes In each session, the lecturer presented materials using PowerPoint slides, gave exercises or assignments to students, and discussed them on the whiteboard. The lecturer uploaded the materials on Google Classroom. Hence, students who wanted to review materials needed to review their class notes and read the materials. However, the face-to-face session was not recorded.	Duration: 14 weeks A video was uploaded each week. All sessions were conducted using asynchronous session. The lecturer had previously recorded and created presentations using Camtasia. Each video had the duration of around 30-45 minutes. The lecturer uploaded the video every week on YouTube and provided the link shared through Google Classroom. Students could access the videos anytime. The lecturer uploaded the materials on Google Classroom. Learning materials covered the same PowerPoint slides and exercises as given to students in the face-to-face classroom. Some exercises were multiple-choice questions, and some exercises were essay format questions answered using Excel. The answers of exercises were provided on an Excel spreadsheet. The lecturer encouraged the students from online classes to actively participate in the discussion forum. The participations were marked as parts of assessment processes. The lecturer provided feedbacks and answers on the discussion forum. The class discussions were performed using the forum features on Google Classroom.
Assessments	Presentation: 15% Individual assignment: 20% Quiz: 15% Mid-exam: 25% Final exam: 25%	Presentation video: 20% Group assignment: 25% Individual assignment: 25% Quiz: 15% Participation: 10% Peer assessment: 5%

After working on the quiz, students were asked to fill out the learning style questionnaire. This questionnaire was used to identify the students' learning styles developed by Fleming and Mills (1992). There are three learning styles stated in the model consisting of visual, auditory, and kinesthetic. The questionnaire contained 27 statements. The students were asked to evaluate each statement by ticking the columns written "never", "rarely", "sometimes", "often" and "always". This research used the questionnaire provided by Rizqi (2013). The questionnaire used in this study was provided in the appendix. The questionnaire was created and distributed to students in Indonesian language. However, the questionnaire attached in the appendix had been translated into English for publication purposes.

Research Model

Hypothesis 1 was used to examine whether online learning affects student performance. There are four control variables included in the model. The four control variables were GPA, course credits taken in the related semester, gender, and age. These control variables were chosen based on those mentioned in the previous studies as conducted by Sanford (2017), McCarthy et al. (2019), as well as Asarta and Schmidt (2020).

The model for hypothesis 1 was as follows:

$$\textbf{Quiz Score} = \alpha + \beta_1\textbf{Visual} + \beta_2\textbf{Auditory} + \beta_3\textbf{Kinesthetic} + \beta_4\textbf{Online} + \beta_8\textbf{GPA} + \beta_9\textbf{Credits} + \beta_{10}\textbf{Gender} + \beta_{11}\textbf{Age} + \textbf{e}$$

Where:

Quiz Score = Quiz score
Visual = visual or non-visual learning style (1 visual; 0 non-visual)

Auditory = auditory or non-auditory learning style (1 auditory; 0 non-auditory)
Kinesthetic = kinesthetic or non-kinesthetic learning style (1 kinesthetic; 0 non-kinesthetic)
Online = online course or face-to-face (1 online; 0 face-to-face)
GPA = cumulative grade point average at the beginning of semester
Credits = number of credits taken in the related semester
Gender = gender dummy (1 female; 0 male)
Age = age of students

If the coefficient of β_4 Online in the model above is negative and statistically significant, hypothesis 1 is supported. It means that online learning has a negative effect on student performance.

Hypothesis 2 is used to examine whether the students' learning styles affect online learning effectiveness. The model used to test hypothesis 2 was similar with that used to examine hypothesis 1, yet without visual, auditory, and kinesthetic dummy variables. The model will be separately examined for visual, auditory, and kinesthetic learners. Hence, there will be three separated tests consisting of first regression test for visual learners, second regression test for auditory learners, and third regression test for kinesthetic learners.

$$\textbf{Quiz Score} = \alpha + \beta_1\textbf{Online} + \beta_2\textbf{GPA} + \beta_3\textbf{Credits} + \beta_4\textbf{Gender} + \beta_5\textbf{Age} + e$$

If the coefficient of β_1 Online in the regression for visual learners is not statistically significant, hypothesis 2a is supported. It means that visual learners' performance in online class is not different from that in face-to-face class. If the coefficient of β_1 Online in the regression for auditory learners is negative and statistically significant, hypothesis 2b is supported. It means that the performance of auditory learners, as measured using Quiz Score, in online class is lower than that in face-to-face classroom.

If the coefficient of β_1 Online in the regression for kinesthetic learners is negative and statistically significant, hypothesis 2c is supported. It means that kinesthetic learners' performance, as measured using Quiz Score, in online class is lower than that in face-to-face classroom. However, if the samples are less than 30, it is inappropriate to use the regression. Hence, the non-parametric test will be used. The non-parametric test will be used to compare whether the median quiz score of students in online classroom is different from that in face-to-face classroom.

RESULTS AND DISCUSSION

This research used samples from two classes, consisting of face-to-face and online class. There were 50 students in each class. However, four students (two students from each class) did not attend the quiz session on the previously determined time. Thus, 96 students (48 students from each class) participated in this research.

Based on gender, both classes had different proportions of male and female students. There were more female students in face-to-face classroom. 56% of students in face-to-face classroom were women, while 44% were men. Meanwhile, the online class had more male (65%) than female students (35%). This study could not control each class's proportion of males and females because students choose their own class code. However, all students did not know whether they choose online or face-to-face classroom.

Table 2. Number of Total Samples

	Face-to-face class	Online class
Students	50	50
Not attending	(2)	(2)
Samples	48	48

Table 3. Samples Statistically Based on Gender

	Face-to-face class			Online class		
	Male	Female	Total	Male	Female	Total
Gender	19 (44%)	27 (56%)	48 (100%)	31 (65%)	17 (35%)	48 (100%)

Table 4. Mean, Minimum, Maximum, and Standard Deviation of Samples

	Face-to-face class				Online class			
	Mean	**Min**	**Max**	**Stdev**	**Mean**	**Min**	**Max**	**Stdev**
Quiz	62.48	37	77	8.627	54.40	43	70	7.618
GPA	3.2869	2.43	3.95	.30113	3.3058	2.56	3.86	.32406
Credit	22.56	9	24	2.813	22.38	13	24	1.864
Age	20.23	19	23	.722	20.25	19	23	.758

Table 4 shows that the average quiz score in face-to-face classroom was higher than that in online class. The average quiz score in face-to-face class was 62.48, while that in online class ws 54.40. The difference was statistically significant (p = 0.000). This result shows early indications that student performance in online class was lower than that in face-to-face class. Nevertheless, we still need to test the hypothesis by controlling some variables.

Table 4 also shows the control variables' descriptive statistics, cumulative GPA at the beginning of semester, credits taken in the related semester, and age. Based on those three control variables, we can conclude a similar characteristic between the samples in face-to-face class and those in online class. Students' average GPA in face-to-face class was not different from that in online class. The average GPA of students in face-to-face class was 3.2869, while that in online class was 3.3058. The average credits taken in the related semester were also similar. The students' average credits in face-to-face class were 22.56, and those in the online class were 22.38. The average age of students in face-to-face class was also similar to that in online class. The average age of students in face-to-face class is 20.23, while that in online class was 20.25. The descriptive statistics shows that there were no different significant characteristics in these two sample groups.

Table 5. Learning Style Statistics

	Face-to-face class	Online class	Total
Visual	10	9	19
Auditory	13	19	32
Kinesthetic	34	23	57

Table 5 shows the students' learning styles based on questionnaires completed by the students. There were 19 visual learners (10 in face-to-face class and 9 in online class), 32 auditory learners (13 in face-to-face class and 19 in online class), and 57 kinesthetic learners (34 in face-to-face class and 23 in online class). However, a student could have multiple learning styles. There were two visual-auditory leaners, five visual-kinesthetic learners, one auditory-kinesthetic learner, and two visual-auditory-kinesthetic learners.

Table 6. Regression Results: Model for Hypothesis 1

Model	Sum of squares	df	F	Sig.
Regression	2586.030	8	5.400	.000***
Residual	5207.595	87		
Total	7793.625	95		
R-square	0.332			
Adjusted R-square	0.270			

Coefficients	Unstandardized Beta	t-stat	Sig.
Constant	-4.234	-0.141	.889
Visual	0.717	0.314	.754
Auditory	-0.455	-0.167	.867
Kinesthetic	1.192	0.437	.663
Online	-8.873	-5.321	.000***
GPA	5.632	1.933	.056*
Credits in the related semester	-0.040	-0.104	.918
Gender	-4.645	-2.676	.009***
Age	2.513	2.076	.041**

Table 7. Mean-Whitney Test: Model for Hypothesis 2a (Visual Learners)

	Online	N	Mean Rank	Sum of Ranks
Quiz Score	0	10	12.00	120.00
	1	9	7.78	70.00
	Total	19		

	Quiz Score
Mann-Whitney U	25.000
Wilcoxon W	70.000
Z	-1.654
Asymp. Sig. (2-tailed)	0.098
Exact Sig.	0.113

Table 8. Regression Results: Model for Hypothesis 2b (Auditory Learners)

Model	Sum of squares	df	F	Sig
Regression	1478.058	5	5.549	.001*
Residual	1385.161	26		
Total	2863.219	31		
R-square	.516			
Adjusted R-square	.423			

Coefficients	Unstandardized Beta	t stat	Sig
Constant	-45.884	-.767	.450
Online	-14.087	-5.078	.000
GPA	-3.815	-.613	.545
Credits in related semester	1.451	1.798	.084
Gender	-3.643	-1.283	.211
Age	4.592	1.952	.062

Table 7 shows that the significance of Mean-Whitney Test was 0.113 or statistically insignificant, meaning that the median of visual learners' quiz score in online classroom was no different from that in the face-to-face classroom. The results were further discussed in the discussion section.

Table 8 shows that the model used for testing hypothesis 2b was considered valid. The model was statistically significant with the confidence level of 99.9% (p = 0.001). The r-square of the model was 0.516, meaning that the model could explain 51.6% of the dependent variable's variations. The results were further discussed in the discussion section.

Table 9. Regression Results: Model for Hypothesis 2c (Kinesthetic Learners)

Model	Sum of squares	df	F	Sig
Regression	1281.133	5	4.553	.002*
Residual	2870.130	51		
Total	4151.263	56		
R-square	.309			
Adjusted R-square	.241			

Coefficients	Unstandardized Beta	t stat	Sig
Constant	16.246	.451	.654
Online	-8.595	-4.087	.000
GPA	3.073	.852	.398
Credits in related semester	-.293	-.644	.523
Gender	-5.155	-2.342	.023
Age	2.265	1.588	.118

Table 9 shows that the model used for testing hypothesis 2 is considered valid. The model was statistically significant with the confidence level of 99.8% (p = 0.002). The r-square of the model was 0.309, meaning that the model could explain 30.9% of the dependent variable's variations. The results were further discussed in the discussion section.

The results of hypothesis testing were discussed in this part. The first hypothesis was that the students' performance in online class which was lower than that in face-to-face class. The second hypothesis was that visual learners had similar performance in both online and face-to-face classes. Auditory learners had lower performance in online class than in face-to-face class, and kinesthetic learners had lower performance in online class than in face-to-face classroom.

Accounting Students' Performance in both Online and Face-To-Face Classes

Table 6 shows that the dummy "Online" variable coefficient was negative and statistically significant (p=0.0000). In this model, the students in the online class were coded 1, and those in the face-to-face class were coded 0. The negative coefficient of -8.873 shows that, the students in the online class had the average score of -8.873 lower than that of students in the face-to-face class. It meant that the course delivery mode (online vs. face-to-face) was negatively associated with student performance. The students in the online class has lower performance than those in the face-to-face class. This result supported hypothesis 1. The same results were also found in those of research conducted by Sohn and Romal (2015) as well as Sanford (2017).

Sanford (2017) explained that face-to-face learning had several advantages related to information and spontaneity. Face-to-face is considered as the richest communication medium, when compared to the other media, such as telephone discussions, documents, and text messages. (Shepherd & Martz, 2006) found that there was an association between media richness and communication quality and quantity in courses. Thus, the communication quality and quantity increased the effectiveness of face-to-face learning.

On the contrary, there may be lack of spontaneity and connectedness among students found in online courses. In online classroom, communication among students and between students and lecturers was conducted using texts in forum. Text messages were considered as one of the least-rich communication media (Shepherd & Martz, 2006). In addition, Zembylas (2008) found that students in online classroom doubted the effectiveness of online learning. Furthermore, the students also reported their loneliness feelings and eventually resulted in stress. Anxiety, loneliness, and stress might decrease the students' performance in online classroom.

The Impact of Learning Styles on the Accounting Students' Performance

Table 7 shows that the median quiz score difference of students in online classroom and those in face-to-face classroom was statistically insignificant. There were 19 visual learners in this research: 9 in online classroom and 10 in face-to-face classroom. The students in online classroom were coded 1, while those in face-to-face classroom were coded 0. Based on the Mann-Whitney Test, the mean rank of students in face-to-face classroom was 12.00, while the mean rank of those in online classroom was 7.78. However, the significance of Mean-Whitney Test was 0.113, meaning that the median quiz score difference of students in online classroom and those in face-to-face classroom was statistically insignificant. In the other words, the visual learners' median quiz score in the online classroom was no different from that in the face-to-face classroom, meaning that the course delivery mode did not affect the visual learners' performance. The visual learners in the online classroom performed as well as those in face-to-face class. This result supported hypothesis 2a. The performance of visual learners in the online classroom was not different from that in the face-to-face classroom.

Jamulia (2018) explained that visual learners were the most comfortable with pictures, images, and graphs while studying and obtaining information. The visual learners preferred repetition, visual imaging, outlining, and requiring visual aids, such as charts, diagrams, drawings and outlines, to make sense of something new (Zapalska & Brozik, 2006). Both students in the face-to-face and online classes used pictures, images, graphs, charts, and drawings in the lectures. In the face-to-face classroom, pictures, images, graphs, charts, and drawings were presented using PowerPoint slides. The lecturer explained those pictures, images, graphs, charts, and drawings directly to the students in face-to-face classroom. In the online classroom, pictures, images, graphs, charts, and drawings were presented on videos shared by the lecturer. Thus, the visual learners experienced the same learning experience both in face-to-face and online classes. Consequently, the visual learners' performance in the online classroom was not different from that in the face-to-face classroom.

Table 8 shows that the dummy "Online" variable coefficient was negative and statistically significant (p = 0.000). There were 32 auditory learners in this research, 19 in online classroom, and 13 in face-to-face classroom. The dummy "Online" variable was used to investigate whether or not course delivery mode (online vs face-to-face) affected the performance of auditory learners in the classroom. Students in the online classroom were coded 1, while those in the face-to-face classroom were coded 0. The result shows that the dummy "Online" variable was negative (-14.087) and statistically significant. It meant that the auditory learners in online classroom had the average score of 14.087 lower than that in the face-to-face classroom. This result shows that course delivery mode affected the performance of auditory learners. The auditory learners in online classroom had lower performance than those in face-to-face classroom. This result supported hypothesis 2b.

Auditory learners needed to verbally express what they learned, solve problems by talking about them and discuss the materials in the classroom (Jamulia, 2018). Zapalska and Brozik (2006) explained that auditory learners needed to interact with information orally, request verbal repetitions, and rephrase. In this study, the students in the online class just watched the pre-recorded videos. There was no direct interaction between the lecturer and the students as well as among the students. Students could not directly ask questions to the lecturer or discuss questions verbally with the other students. The auditory learners could indeed learn by listening to the lecturer. However, the auditory learners needed to express opinions verbally and resolve the problems by discussing them with their classmates. Learning experience did not happen in the online classroom since the online classroom was delivered through the pre-recorded videos. Discussions were held through the forum on Google Classroom. There was no intensive verbal interaction, just like what happened in the face-to-face classroom. Since the auditory learners did not gain learning experience as good as those in the face-to-face classroom which negatively impacted the auditory learners' performance in the online classroom.

Table 9 also shows that the coefficient of dummy "Online" variable was negative and statistically significant (p=0.000). There were 57 auditory learners in this research, 23 in online classroom and 34 in face-to-face classroom. The dummy "Online" variable was used to investigate whether the course delivery mode (online vs face-to-face) affected the performance of kinesthetic learners in the classroom. The

students in the online classroom were coded 1, and those in the face-to-face classroom were coded 0. The result shows that the dummy "Online" variable was negative (-8.595) and statistically significant. It meant that the kinesthetic learners in online classroom had the average score of 8.595 lower than those in face-to-face classroom. This result shows that course delivery mode affected the performance of kinesthetic learners. The kinesthetic learners in online classroom showed lower performance than those in face-to-face classroom. This result supported hypothesis 2c.

The kinesthetic learners preferred active participation experiences, for example, drama, role-play, or moving around. Those students learned best by experiencing and involving physically in the classroom. An example of a stimuli combination was an audiotape combined with activity to help the learners understand the new materials (Jamulia, 2018). The kinesthetic learners, just like learning by doing and relying on physical interactions during learning processes (Zapalska & Brozik, 2006). It was concluded that kinesthetic learners preferred active participation and physical activity. The kinesthetic learners learned more effectively when physically involved in the classroom. In online classroom, the kinesthetic learners got difficulties to gain experiences. There is no physical activity in the online classroom since the students learned through pre-recorded videos provided by the lecturer. In the face-to-face classroom, it was easier for the kinesthetic learners to move around and be physically involved in the classroom activities. Since the kinesthetic learners did not gain learning experience as good as those in a face-to-face classroom, it negatively impacted the kinesthetic learners' performance in the online classroom.

CONCLUSION

This study revealed that the effectiveness of online learning through pre-recorded videos was lower than that in face-to-face learning. This finding supported the previous studies conducted by Sohn and Romal (2015) as well as Sanford (2017). Sanford (2017) argued that the possible advantages of face-to-face learning outweighed its possible disadvantages. Possible advantages of face-to-face learning included comprehensible information and spontaneity. These possible advantages exceeded the possible disadvantages of face-to-face learning, such as information overload and stress.

This study also shows that different learning styles affected students' performance in the online classroom. Using learning styles proposed by Fleming and Mills (1992), this study classified the students into three categories: visual, auditory, and kinesthetic students. This study found that visual learners had similar performance in both online and face-to-face classroom because the visual learners acquired similar learning experiences in both environments in accordance with their learning preferences. Jamulia (2018) argued that visual learners were mostly comfortable with pictures, images, and graphs while studying and obtaining information. Online learning mostly provided similar intensity of pictures, images, and graphs with face-to-face learning.

This study found that auditory learners and kinesthetic learners in the online classroom were not as good as those in face-to-face classroom. The possible explanation was that verbal expression used by the auditory learners in asynchronous sessions was minimal. Auditory learners learned best when listening to information, lectures, and expressing verbally what they had learned. They also needed to talk and discuss with their classmates when solving the problems (Jamulia, 2018). A similar phenomenon was also found in the kinesthetic learners. The performance of kinesthetic learners in online classroom was worse than those in face-to-face classroom. In the asynchronous session, kinesthetic learners got less stimulation than that in face-to-face classroom. There was no active participation in physical activity, such as drama, role-play, or moving around (Jamulia, 2018).

This study supported some previous findings showing that online learning had lower effectiveness than face-to-face learning. This study also contributed to the literature on online learning by adding new findings that learning styles affected online learning effectiveness. The practical implication was that the academic institutions and lecturers should consider auditory and kinesthetic learners in designing the learning activities. Using pre-recorded videos will only benefit the visual learners not the auditory and kinesthetic learners. Academic institutions and lecturers should ensure that learning activities should involve verbal discussion to accommodate the auditory learners and physical activity to accommodate the kinesthetic learners.

There are some limitations to this study. First, the online learning method in this study only covered the online learning through pre-recorded videos or asynchronous model. Different conclusions may be found in different online learning methods, such as synchronous or live session or online learning with a dynamic presentation made by the students. Further studies are needed to explore how synchronous sessions or students' dynamic presentation and discussion will affect the students' performance.
Another limitation of this study is that this study only used one quiz score to measure the students' performance. The students' performance should be measured using a more comprehensive assessment model, comparing the online classes and face-to-face classes. Subsequent studies should employ more comprehensive assessment in measuring the students' performance. Students' performance could be measured through quizzes, mid-term examination, and final-term examination.

REFERENCES

Asarta, C. J., & Schmidt, J. R. (2020). The effects of online and blended experience on outcomes in a blended learning environment. *The Internet and Higher Education, 44*. doi:10.1016/j.iheduc.2019.100708

Awla, H. A. (2014). Learning styles and their relation to teaching styles. *International Journal of Language and Linguistics, 2*(3), 241-245. doi:10.11648/j.ijll.20140203.23

Fadol, Y., Aldamen, H., & Saadullah, S. (2018). A comparative analysis of flipped, online and traditional teaching: A case of female Middle Eastern management students. *The International Journal of Management Education, 16*(2), 266-280. doi:10.1016/j.ijme.2018.04.003

Fleming, N. D., & Mills, C. (1992). Not Another Inventory, Rather a Catalyst for Reflection. *To Improve the Academy, 11*.

Hatami, S. (2012). Learning styles. *ELT Journal, 67*(4), 488-490. doi:10.1093/elt/ccs083 %J ELT Journal

Jamulia, J. (2018). Identifying students learning style preferences at IAIN Ternate. *International Journal of Education, 10*(2), 121-129. doi:10.17509/ije.v10i2.1631

Jarrett, C. (2018). "An additional reason to abandon learning styles" – teachers and pupils do not agree on the pupils' preferred learning style. Retrieved from https://digest.bps.org.uk/2018/12/12/an-additional-reason-to-abandon-learning-styles-teachers-and-pupils-do-not-agree-on-the-pupils-preferred-learning-style/

Kumar, P., Kumar, A., Palvia, S., & Verma, S. (2019). Online business education research: Systematic analysis and a conceptual model. *The International Journal of Management Education, 17*(1), 26-35. doi:10.1016/j.ijme.2018.11.002

McCarthy, M., Kusaila, M., & Grasso, L. (2019). Intermediate accounting and auditing: Does course delivery mode impact student performance? *Journal of Accounting Education, 46*, 26-42. doi:10.1016/j.jaccedu.2018.12.001

Nguyen, T. (2015). The Effectiveness of Online Learning: Beyond No Significant Difference and Future Horizons. *MERLOT Journal of Online Learning and Teaching, 11*(2), 309-319.

Ni, A. Y. (2013). Comparing the Effectiveness of Classroom and Online Learning: Teaching Research Methods. *Journal of Public Affairs Education, 19*(2), 199-215. doi:10.1080/15236803.2013.12001730

Pashler, H., McDaniel, M., Rohrer, D., & Bjork, R. (2008). Learning Styles: Concepts and Evidence. *Psychological Science in the Public Interest, 9*(3), 105-119. doi:10.1111/j.1539-6053.2009.01038.x

Perna, J. (2011). *Learning styles and their effect on student learning.* (Senior Honor Theses), Eastern Michigan University, Retrieved from http://commons.emich.edu/honors/270 (270)

Rizqi, A. (2013). *Gaya Belajar Siswa SMK Piri 1 Yogyakarta.* Universitas Negeri Yogyakarta, Yogyakarta. Retrieved from http://eprints.uny.ac.id/22067/1/Achmad%20Rizqi%2009504241003.pdf

Sanford, D. (2017). Course format and learning: The moderating role of overall academic performance. *The International Journal of Management Education, 15*(3), 490-500. doi:10.1016/j.ijme.2017.08.003

Sarabdeen, J. (2013). Learning styles and training methods. *IBIMA Communications, 2013*, 1-9. doi:10.5171/2013.311167

Shepherd, M. M., & Martz, W. B. (2006). Media Richness Theory and the Distance Education Environment. *Journal of Computer Information Systems, 47*(1), 114-122. doi:10.1080/08874417.2006.11645945

Sohn, K., & Romal, J. B. (2015). Meta-Analysis of Student Performance in Micro and Macro Economics: Online Vs. Face-To-Face Instruction. *Journal of Applied Business & Economics, 17*(2), 42-51.

Zapalska, A., & Brozik, D. (2006). Learning styles and online education. *Campus-Wide Information Systems, 23*(5), 1065-0741. doi:10.1108/10650740610714080

Zembylas, M. (2008). Adult learners' emotions in online learning. *Distance Education, 29*(1), 71-87. doi:10.1080/01587910802004852

APPENDIX

QUESTIONNAIRE ON LEARNING STYLES

Student's Registration Number	:	
Age	:	..... years old
Gender	:	Male / Female*
Class	:	Online / Face-to-Face*
Cumulative GPA	:	
Course Credits in the related semester	:	

* = cross the unnecessary ones

Instruction:

Choose one best answer for each statement below by putting a tick (V) in the appropriate column.

No	Statement	Never	Rarely	Some-times	Often	Always
1	It is easier for me to understand the lesson after reading the materials well					
2	I understand the materials more easily after listening to the explanations well					
3	I learn best after touching the work object					
4	I understand the messages better after spoken than written explanations					
5	It is easy to understand a written message rather than that explained in words					
6	I enjoy hands-on learning more than studying in class					
7	Pictures, diagrams, posters, and graphics really helped me remember and understand the lesson					
8	Reading books aloud repetitively is the best way for me to remember					
9	I better understand the materials explained through demonstrations and props					
10	I enjoy listening to radio broadcasts, music, or karaoke instead of watching TV					
11	I find it easier to remember a name than a person's face					
12	I like watching TV or reading novels rather than listening to music or radio					
13	I enjoy physical activities, such as sports					
14	I remember better what I learned through practice					
15	Listening to stories is much more fun than reading storybooks					
16	I find it easier to remember a person's face rather than a person's name					
17	I can only study well when it is calm					
18	I feel bored sitting and studying in the class for too long					
19	I often do things like tapping pens, chewing candy during the learning processes					
20	I prefer talking on the phone rather than meeting					

No	Statement	Never	Rarely	Some-times	Often	Always
	others in person					
21	I am very excited when participating in making or fixing something with my hands					
22	I touch someone to get the attention					
23	I am easily distracted by sounds when I am studying					
24	I prefer reading storybooks to listening to stories					
25	I do not feel bothered by noises while I am studying					
26	I like to have a face-to-face conversation with others rather than on the phone					
27	I prefer written assignments rather than those explained in words					