Using Role Play Simulation and Hands-on Models to Enhance Students'
Learning Fundamental Accounting Concepts

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ABSTRACT

This paper both documents and assesses the use of a role play simulation exercise that can easily be incorporated into the first week of the first course in accounting. The exercise actively involves students by having them assume roles and simulate transactions to start a business. In addition, the students also perform a record-keeping role. Both the medium of exchange and record-keeping are accomplished by using white, red and blue poker chips. A primary focus of the exercise is to learn how transactions affect the fundamental accounting equation (assets=liabilities+owners' equity). In addition, several other fundamental accounting concepts are introduced. To assess if the exercise enhances student learning, other sections of the same accounting course learned identical subject matter with a lecture format. An assessment instrument was administered to both student groups. The results indicate that role play simulation enhances students' transfer problem solving, but there is no evidence that it enhances conceptual recall beyond that which can be attained via a traditional lecture. In addition, there is evidence that the role play simulation exercise helps student better retain problem solving learning over a four week period.

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In its call for accounting curricular reform, the Accounting Education Change

Commission (AECC 1992, p. 250) states that "teachers of the first course in accounting should

put a priority on their interaction with students and on interaction among students." This paper

documents and evaluates an in-class exercise using role play simulation along with hands-on

learning materials to enhance student interaction while learning fundamental accounting

concepts. Assessment of this in-class exercise indicates that it does enhance students' transfer

problem solving[1] capabilities, but there is no evidence that it enhances conceptual recall beyond

that which can be attained via a traditional lecture oriented learning environment.

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[1] Transfer problem solving is the ability to transfer what one has learned to solve new
problems.

Role playing typically involves unstructured situations in which students improvise behavior according to their assigned roles (McKeachie 1994, p. 167). Simulations are usually defined more precisely with guiding principles, rules and structured relationships (Bonwell and Eison 1991, p. 47). Role play simulation entails assigning students to unique roles within a group as the group addresses a series of issues (DeNeve and Heppner 1997, p. 234). Role play simulations can accomplish multiple objectives. These are: "(a) to arouse student interest for a particular field of study, (b) to help students apply material learned in class, (c) to help students develop insight into the group dynamics of problem solving situations, (d) to give students a chance to develop leadership skills, and (e) to provide students with a working grasp of the scientific method" (DeNeve and Heppner 1997, p. 234). While role play simulation can accomplish a number of objectives, the focus of this study is assessment of enhanced student learning.

Since the Accounting Education Change Commission's (AECC 1990, p. 309) call for active learning strategies in the accounting curriculum, a number of studies have documented their use. These include the use of cooperative learning (Ravenscroft, et. al. 1995; Peek et. al. 1995; Ciccotello et. al. 1996; Lindquist and Abraham 1996; Hite 1996), simulation (Knechel and Rand 1994; Albrecht 1995), and writing (Scofield and Combes 1993). While there has been a notable increase documenting the use of active learning strategies, much work remains in terms of assessing the conditions under which they are effective in the accounting curriculum. To fully understand the advantages of active learning strategies, one must assess the conditions under which these strategies are effective. Their effectiveness is dependent upon at least four characteristics: (1) the subject matter, (2) the educational setting, (3) the specific learning materials, (4) the desired learning outcomes (DeNeve and Heppner 1997, p. 130).

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First, with regard to using role play simulations or role plays in an accounting context, several studies have either advocated their use or provided specific examples. Tomassini (1974) examines the use of role play simulation in accounting. More recent studies document using role play simulation with Monopoly^{TM} (Albrecht 1995; Knechel and Rand 1994). With regard to role plays (rather than role play simulations), Craig and Amernic (1994) examine their use in the context of using accounting information in labor disputes. Haskins and Crum (1985) document the use of role play in a cost allocations setting. Assessment of these methods is relatively sparse, however. One exception is Craig and Amernic who assess role play by examining student opinions. This study extends upon prior work by not only documenting the use of role play simulation, but by also providing an assessment of student learning.

Second, students can learn under a variety of learning settings. These range from passive lectures to more active strategies such as role play simulation or cooperative learning. This study differs the learning environment by presenting the same fact scenario with a lecture versus using a role play simulation.

Third, the learning materials that students use can vary from abstract characterizations to having more realistic hands-on materials (Ferguson and Hegarty 1995). In this study, students who participate in the lecture learning environment are able to observe a problem being worked on a blackboard. The students who participate in the role play simulation also are able to observe the same material on the blackboard, but are also able to manipulate poker chips as reinforcement. Thus, this study *jointly* assesses the impact of using a more active learning environment along with hands-on learning materials on students' learning.

Fourth, it is possible for some learning strategies to affect some learning outcomes and not others. Learning outcomes are the knowledge students gain as a result of the learning

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experience. This study focuses on students' learning and understanding fundamental relationships in accounting systems. Mayer (1989) has performed extensive analysis of ways to enhance students' learning scientific and computer systems. His research focuses on the usefulness of providing students models as aids to help them understand systems. These models can be explained with words or diagrams. He has found that students who are given model instruction about scientific systems demonstrate enhanced transfer problem solving and conceptual recall. They are less likely, however, to be able to recall verbatim information such as a list of details. In the AECC's call for improving accounting education, it posits that "the focus should be on developing analytical and conceptual thinking, not on memorizing professional standards" (AECC 1990, p. 308). A focus on helping students form mental models may be an avenue to accomplish the focus on accounting knowledge acquisition for which the AECC calls. In addition, Mayer (1989, p. 44) notes that novice students, such as those in the first accounting course, are more likely to benefit from instruction which fosters model building since they are less likely to already possess sophisticated conceptual models which may conflict which those presented during instruction.

Both instructional settings in the experiment (traditional lecture and role play simulation) attempt to help students form mental models of the fundamental accounting equation (assets=liabilities+owners' equity). The focus of the study to determine if the more active learning environment along with the hands-on learning material enhances students' ability to understand the model and thereby perform better in terms of problem solving and conceptual recall.

DESCRIPTION OF ROLE PLAY SIMULATION

This in-class exercise assigns students to perform roles within a set of pre-specified transactions forming a simulation of the formation of a new business. It can easily be incorporated in the first week of the first course in accounting and facilitates a high level of interaction among students who often do not know each other prior to attending the course.

Most of the students in the class are divided into groups of three that form a business. The students in the firm-groups all perform a record keeping and/or transaction engaging role in the role play simulation. One member of each business group is given a cupful of red chips; another is given a cupful of blue chips. The students who are not assigned to roles within a firm are assigned to banker, supplier, landlord, customer and business owner roles. Each of these "volunteers" is given a cupful of white poker chips. They are told that these chips represent resources. One student is assigned to the banker, supplier, landlord and customer roles. The number of owner roles is equal to the number of firm-groups. Thus, each member of the class has a role. To facilitate formation, usually the firm-group roles are assigned after students volunteer for the banker, supplier, customer, landlord and owner roles. Each member of the class is then given a handout which lists a series of twelve transactions in which the business will engage. These twelve transactions are provided in Appendix 1.

Each business is beginning its operations. The students are asked what resources the business has at this time. It is obvious that each firm has none. They are then asked to look about the classroom. All the potential resources that a firm needs to begin a business are external to the firm; the firm must engage in transactions with these parties in order to procure the resources necessary to start a business.[2]

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[2]For schools who have adopted a contracting perspective for their accounting curriculum,

this exercise provides an excellent illustration of these concepts.

The record-keeping function is then introduced. The student in each business group who does not have any poker chips is assigned the task of keeping track of the resources as they are procured and disbursed. The concept that there must be a source for every resource is discussed. The importance of keeping track of the sources of resources, liabilities and owners' equity, is addressed. Finally, the fundamental relationship between assets, liabilities and owners' equity is discussed with the fundamental accounting equation (assets=liabilities+owners' equity) written across the top of the blackboard.

The students then engage in transactions using the poker chips as the medium of exchange and to perform the record keeping function. For example, the first transaction has the owner contributing $10,000 to the business and receiving stock in return. Each owner gives each business ten white poker chips representing $10,000 in cash.[3] The student in charge of assets stacks the assets on a common area designated for keeping track of assets, liabilities and owners' equity. The student responsible for the blue chips also stacks ten blue poker chips indicating that owners' equity increased. After each transaction, the students are asked to verify that the accounting equation remains in balance by stacking their liabilities (red chips) on top of their owners' equity (blue chips) and noting that the stack is the same height as the firm's assets (white chips).[4]

Several accounting concepts are introduced with the twelve transactions in the exercise.

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[3]Each poker chip represents $1,000.

[4]The poker chips are reintroduced later in the course to illustrate the relationship between the income statement and the balance sheet by recording the portion of transactions relating to the income statement with blue chips on one side of the classroom with the balance sheet portion on the other. When the income statement poker chips return to the balance sheet via retained earnings, the balance sheet balances. (This is illustrated by verifying that assets (white chips) are equal to liabilities (red chips) and owners' equity (blue chips).

These include, but are not limited to: the accounting entity concept, revenue recognition, the

matching principle, operating activities, investing activities and financing activities. A complete

description of the concepts illustrated and discussed with each transaction is provided in

Appendix 1.

ASSESSMENT

Experimental Design

Six sections of an introductory accounting course at a medium-sized Midwest public university participated in an experiment over three semesters to assess the effectiveness of using role play simulation to teach fundamental accounting concepts. Some of the students participated in the role play simulation exercise as described above; the remainder discussed the identical twelve transactions in a lecture-oriented format. The concepts and material presented in the classroom experience in the lecture-oriented format were identical in content to those of the role play simulation. The instructor had notes for each transaction which specified what items needed to be addressed in each class. Similar to the role play simulation experience, the fundamental accounting equation (assets=liabilities + owners' equity) was written across the blackboard in the classroom, and the students participated in figuring out how each transaction affected the accounting equation. These classes, however, did not have poker chips and did not have students actively assuming roles.

Immediately following the classroom activity, each student was asked to answer several questions using the assessment instrument in Appendix 2. The students were not told that they would be answering questions based on their classroom experience until after it was completed. To increase the assessment's salience, the students were told that their score on these questions would replace their lowest homework grade if their score was better than the lowest homework. All sections participating in the experiment had the same instructor, assessment instrument and performance incentives. Both the lecture-oriented exercise and role-play simulation consumed approximately one hour of class time. The remaining 15 minutes of the 75 minute class were used for assessment and classroom housekeeping. The effect of alternative classroom

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environments on retained learning was also assessed.   Approximately four weeks after the

classroom presentation, the students answered a question on their first exam in the course that

built upon the material.[5] All six sections had the same intervening classroom material with all

using the same teaching methods from the day after the experiment to the day before the first

exam.

Analysis

Assessment Instrument Results

The assessment instrument administered immediately following each classroom

presentation has two types of questions. The first five questions assess transfer problem solving

involving the fundamental accounting equation. The second five questions assess conceptual

recall.

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[5]This assessment was conducted over three semesters. To mitigate the effects of
subsequent sections learning from prior exams, the exam question was altered in terms of order
and the specific assets, liabilities, owners' equity, revenues and expenses that were affected by
each transaction. In addition, both the lecture-oriented and simulation formats were spread over
the three semesters. Empirical assessment indicates that there is no reason to believe that the
carryover effect from one exam to the next is greater for students in one classroom presentation
over another.

Table 1 displays the mean number of correct student responses for each classroom presentation by the type of assessment question. In all cases, the mean number of correct responses is higher for the students who were able to participate in the role play simulation class than for those that experienced a more lecture-oriented format. Statistical analysis reveals that the students participating in the role play simulation exercise answered significantly more questions correctly than those that participated in a more lecture-oriented format. When the questions are disaggregated into those that focus on problem solving versus those that focus on conceptual recall, however, only the problem solving questions show a statistically significant higher number of correct responses.

Students' retention is also assessed with an exam four weeks after the material was presented. The retention instrument (see Appendix 3) focuses on problem solving since that is the only learning outcome that showed significant differences in learning outcomes initially. The mean score is higher for the role play simulation learning environment at a mildly statistically significant level.

Insert Table 1 here

Further analyses were conducted to mitigate the potential confounding factor that students in the simulation sections perhaps by chance have a higher aptitude for accounting. To control for this possibility, analysis of covariance (ANCOVA) is performed with the number of questions answered correctly as the dependent variable. The independent factor is the classroom learning environment (role play simulation v. lecture). The covariate is the student's aggregate number of points for the course excluding the points for the exam question pertinent to the subject material in the experiment. Use of overall performance in the course not only helps mitigate the effects of differing levels of accounting aptitude across the two classroom

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environments, but it also subsumes other factors which may influence student performance.[6] For

example, Wooten (1998) finds differences in traditional and nontraditional students. Mutchler

et. al. (1987) find that gender may be related to student performance. Lipe (1989) finds that

interaction between the gender of the instructor and that of the student affects student test scores.

Buckless et. al. (1991), however, find no evidence of a gender effect once they controlled for

academic aptitude. Thus, use of a measure of course performance may help mitigate the multiple

factors which can vary across groups of students that may influence student performance.[7]

The results displayed in Table 2 are similar to those shown in Table 1. The learning

environment (role play simulation v. lecture) is statistically significant even after controlling for

overall accounting aptitude. This is predominately true for the problem solving questions

administered using an assessment immediately following the classroom experience; there

remains no evidence of enhanced conceptual recall. These results mirror those found without

attempting to control for overall student aptitude. The results for assessing retention show a

statistically significant learning environment effect after controlling for overall student aptitude.

The simulation learning environment was able to help students of similar accounting aptitude

retain the information in a way that allowed them to perform better on an exam administered four

weeks later.

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[6]GPA and SAT scores were also used as covariates with no material impact on the results. If the role-play simulation led to better overall classroom performance (and therefore better test scores) for the rest of the material in the course, that would tend to bias the results toward not finding significance. The test scores, however, may be a better measure of accounting aptitude with the caveat that they may be biasing the results away from significance.

[7]Additional factors such as gender and traditional v. non-traditional students were also added to the model to assess if there was an effect over and above what was captured by the covariate. These factors were consistently not significant echoing the conclusions reached in Buckless et. al. (1991).

Insert Table 2 here

Student Self-Assessment

Students were asked if they perceived either the problem solving or conceptual questions on the assessment instrument to be more difficult. Results from chi-square tests are displayed in Table 3. They indicate that the students perceived that the conceptual questions were more difficult. Further partitioning of the sample by classroom learning environment (role play simulation v. lecture), gender, and traditional v. non-traditional students does not reveal evidence that this perception varies across these factors. In addition, their perceptions reflect their actual performance on the assessment instrument in that they answered 81.08% of the problem solving questions correctly in comparison to answering 75.26% of the conceptual questions correctly. The difference is statistically significant at less than the .01 level.

Insert Table 3 here

CONCLUDING REMARKS

This study indicates that an active learning environment using role play simulation along with hands-on student learning materials can enhance students' transfer problem solving using fundamental accounting concepts. Students' learning was assessed both immediately after the classroom learning experience and several weeks following introduction of fundamental concepts. Assessment indicates that the active learning environment in which students simulated performing transactions helped them understand the material better than when the same material was presented in a lecture-oriented environment. In addition, when one controls for student accounting aptitude, the students who participated in role play simulation performed better on an

exam four weeks following the class than those who learned the material with a lecture-oriented format. These results do not, however, extend to questions that assess conceptual recall.

Much more work remains to understand the circumstances under which more active learning environments lead to enhanced student learning. In this setting, evidence indicates that the role play simulation along with hands-on learning materials enhanced students' transfer problem solving learning. Further research is needed to assess if this result holds for other topics in the first accounting course. Additional research is needed to assess if more advanced accounting students can benefit from the use of active learning environments to enhance their problem solving abilities.

The results do not show evidence that the more active learning environment enhanced conceptual recall. The students performed more poorly on the conceptual recall questions than the problem solving questions for both environments. It may be that role play simulations offer little advantage over lecture-oriented environments which stress the key components of and relationships between accounting concepts. Alternatively, another learning environment may be superior to either of those explored in this study to enhance conceptual recall. Further work exploring the classroom environments and methods that would enhance this type of knowledge is needed.

Table 1

Differences in Mean Performance Between Students Who
Participated in a Role Play Simulation Exercise Versus Those Who Participated in a More
Lecture-Oriented Classroom Presentation

Performance Measure	Mean Number of Correct Responses		
	Simulation	Lecture-Oriented	t-statistic
All Questions		8.05	
	7.46		
		2.08**	
(Maximum Correct =10)	(91)		(59)
Problem Solving		4.25	
	3.76		
		2.44**	
Questions	(91)		
	(59)		
(Maximum Correct = 5)			
Conceptual Recall		3.81	
	3.69		
		.73	
Questions	(91)		
	(59)		
(Maximum Correct = 5)			
Retention Assessment		20.09	
	19.27		
		1.67*	
(Maximum Points = 25)	(80)		(55)

The values in the parentheses are the number of students in each group. Four students dropped the course before the first exam in the lecture-oriented group during the experiment. In the simulation environment, two students did not take the first exam; nine dropped the course.

**Difference in the means is significant at less than the .05 level with a two-tailed t-test.
*Difference in the means is significant at less than the .10 level with a two-tailed t-test.

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Table 2

Analysis of Covariance Assessing the Efficacy of Role Play Simulation with Hands-on Learning Material Versus Traditional Lecture

Panel A: Dependent Variable is All Questions

Effects	SS	Degrees of Freedom	F-statistic	p-value
Within Group	266.47	114		
Covariate (Course Score)[a]	27.16	1	11.62	.001
Learning Environment[b]	6.64	1	2.84	.095

Panel B: Dependent Variable is Transfer Problem Solving Questions

Effects	SS	Degrees of Freedom	F-statistic	p-value
Within Group	130.28	114		
Covariate (Course Score)[a]	5.85	1	5.12	.027
Learning Environment[b]	5.92	1	5.18	.025

Panel C: Dependent Variable is Conceptual Recall Questions

Effects	SS	Degrees of Freedom	F-statistic	p-value
Within Group	97.43	114		
Covariate (Course Score)[a]	7.80	1		

	SS	Degrees of Freedom	F-statistic	p-value
			9.13	.003
Learning Environment[b]	.02	1	.02	.877

Panel D: Dependent Variable is Problem Solving Exam Question After Four Weeks

Effects	SS	Degrees of Freedom	F-statistic	p-value
Within Group	624.33	114		
Covariate (Course Score)[a]	111.35	1	20.33	.000
Learning Environment[b]	17.62	1	3.22	.076

[a]The covariate is the student's aggregate grade excluding the points allocable to the exam question pertaining to this material. (The maximum number of points is 435).

[b]Learning environment was one of two classroom experiences: (1) learning the material through role playing simulation or (2) learning identical material via a more lecture-oriented format.

Table 3

Student Perceptions of Whether Problem Solving or
Conceptual Recall Assessment Questions are More Difficult

Panel A: Tabulation of Student Perceptions: Entire Sample

Perception of Which is More Difficult	Perception of Which is More Difficult	
	Problem Solving	Conceptual Recall
		36
		111

χ^2 : 38.27 (p=.000)

Panel B: Tabulation of Student Perceptions: By Classroom Learning Environment

Learning Environment	Perception of Which is More Difficult	
	Problem Solving	Conceptual Recall
Role Play Simulation		23
		66
Lecture-Oriented		13
		45

Pearson χ^2: .22 (p=.698)

Panel D: Tabulation of Student Perceptions: By Gender

Gender	Perception of Which is More Difficult	
	Problem Solving	Conceptual Recall
Female		
		15

54

Male

21

57

Pearson χ^2: .53 (p=.565

Panel c: Tabulation of Student Perceptions: By Traditional v. Non-Traditional Students

	Perception of Which is More Difficult	
	Problem Solving	Conceptual Recall
Student Type[a]		
Traditional		
		28
		70
Non-Traditional		
		8
		41

Pearson χ^2: 2.65 (p=.154)
[a]Non-traditional students are those who are age 25 or older. This definition is used by the university in the experiment and also by Wooten (1998).

Appendix 1

Classroom Material Used As a Basis for Simulation RolePlay Exercise

Starting a Business:
Business Transactions

Ima Hoosier is starting a new consulting business. The following events occurred when she started her new business:

Before the exercise begins, students volunteer to assume the roles of banker, supplier, customer, landlord and owners. One student is assigned to each role with the exception of owners. The number of students assigned as owners is equal to the number of firms. Each one of these parties receives a cupful of white poker chips. Each white chip represents $1,000 of assets. The remaining students are divided into groups of three. One is assigned the task of record-keeping. The other two are given either red or blue poker chips. Red poker chips represent liabilities; blue chips represent owners' equity. Before engaging in transactions, the groups are asked to indicate what resources each business has. Since the firms are beginning operations, no firm has any resources. They are then asked to look about the classroom to locate potential resources. All resources (white chips) at this point are held by parties external to the firm. The students are then told that they will engage in transactions which will allow them to acquire and/or use their firm's resources. The fundamental accounting equation is introduced. The words, assets, liabilities and owners' equity are written across the top of a blackboard. The concept that every resource has a source and that source can originate from two potential places is introduced. The fundamental accounting equation (assets=liabilities+owners' equity) is introduced. The effect of each transaction on assets, liabilities and owners' equity is written under the headings for each transaction.

1)   She contributed $10,000 cash to the business and the corporation distributed stock worth $10,000 to the owner.

   In addition to being the first example of how transactions affect the accounting equation, the entity concept is introduced and highlighted with this transaction. The owner's personal assets not invested in the firm remain with each owner. It is noted that some owners have more resources (white chips) than others. This does not affect the amount of resources that are allocated to the firm because of the entity concept.

2)   The firm bought $3,000 of supplies with cash.

   Students realize upon visiting the supplier that they are merely exchanging one asset for another. There is no net change in assets. Liabilities and owners' equity remains unaffected.

3)   The firm borrowed $5,000 cash from the bank.

   The concept of liabilities is further refined.

4)   The firm bought a truck for $4,000 paying for it with cash.

   After the students engage in this transaction, the similarities between (4) and (2) are discussed.

5)   The business realized it did not need as much cash as she thought she would, so it paid off $2,000 of the bank debt.

   This transaction highlights the effect of paying liabilities has on the firm's overall resources.

At this point, the following question is posed. If the firm were to cease being a business, how much in resources would the owner receive? The students realize that the owner would only receive her original investment back. The concept of owners having a residual interest is introduced. The students are asked if owners would be

satisfied over the long-run if they were only to receive their original investment. The notion that the owners are bearing risk to engage in this business is discussed. In return for bearing the risk, the owners are hoping to achieve a higher return for their investment than would be attainable through other investment vehicles. Then, the students are asked how businesses generate returns for their owners. The notion of profit is introduced and that a business must perform a service or sell a product to generate profits. The concepts of operating, investing and financing activities are also introduced. It is noted that up to this point the firm has only engaged in financing and investing activities. To earn a return for its owners, the firm must engage in operating activities.

6)   The firm performed services for customers and received $5,000 cash.

Students have difficulty deciding how balance the accounting equation. They are asked who would receive the $5,000 if the firm were to liquidate. The concept that owners' equity can be divided into two components, contributed capital and retained earnings, is introduced. Revenues are introduced.

7)   The firm paid $1,000 rent in cash.

The concept of expenses is introduced.

8)   The firm performed $3,000 of services for customers and billed them for them.

Revenue recognition and the difference between cash and accrual basis is introduced.

9)   The firm collected $2,000 of the amounts owed from its customers.

The class discusses why the collection from a customer is not a revenue. The impact of this transaction on the accounting equation is emphasized.

10)   The firm used $1,000 of the supplies.

Expenses and the matching principle are discussed.

11)   The firm purchased a $4,000 computer on credit.

Liabilities are reinforced. The term, accounts payable, is introduced.
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12)   The firm paid Ima a $2,000 dividend.

There is a discussion focusing on why dividends are not considered expenses. The notion that a firm has no legal obligation to pay dividends is introduced. In addition, the students are asked how investors are able to achieve a return on a stock investment. Dividends and stock appreciation are discussed. Growth stocks are also discussed at this point.

Note: The italicized descriptions below each transaction indicate what concepts were discussed in class for each transaction.

Appendix 2

Assessment Instrument

1.   Red Company borrowed $10,000 from a bank.

   A.   Assets decreased by $10,000 and liabilities decreased by $10,000.
   B.   Assets increased by $10,000 and liabilities increased by $10,000.
   C.   Assets increase by $10,000 and owners' equity increased by $10,000.
   D.   There was no net change in total assets.
   E.   None of the above.

2.   Red Company bought a computer for $5,000 in cash.

   A.   Assets increased by $5,000 and liabilities decreased by $5,000.
   B.   Assets increased by $5,000 and liabilities increased by $5,000.
   C.   Assets increased by $5,000 and owners' equity increased by $5,000.
   D.   There was no net change in total assets.
   E.   None of the above.

3.   Red Company performed services for customers and received $6,000 in cash.

   A.   Assets increased by $6,000 and liabilities increased by $6,000.
   B.   Assets increased by $6,000 and owners' equity increased by $6,000.
   C.   There was no net change in total assets.
   D.   Assets decreased by $6,000 and liabilities decreased by $6,000.
   E.   None of the above.

4.   Red Company performed $10,000 of services for a Joe Blue and billed him for it. Payment is expected in a few weeks.

   A.   This transaction is not recorded.
   B.   Assets increased by $10,000 and liabilities increased by $10,000.
   C.   Assets increased by $10,000 and owners' equity increased by $10,000.
   D.   There was no net changed in total assets.
   E.   None of the above.

5.   Red Company received $10,000 from Joe Blue for the services that they had performed for him in Number 4.

   A.   Assets increased by $10,000 and owners' equity increased by $10,000.
   B.   Assets increased by $10,000 and liabilities increased by $10,000.
   C.   There was no net change in total assets.
   D.   This transaction is not recorded.
   E.   None of the above.

6.   Expenses are recognized:

        A.   When they are paid in cash.
        B.   When management cares to do so.
        C.   In the time period in which the costs are used up.
        D.   None of the above.

7.   Revenues are recognized:

        A.   When the cash is received.
        B.   When management cares to do so.
        C.   When the service is performed or the product is sold.
        D.   None of the above.

8.   The entity concept in accounting:

        A.   Ensures that an owner's personal assets and liabilities will be recorded separately from a firm's
                assets and liabilities.
        B.   Requires that transactions that involve an exchange of value be kept separately from those that do
                not.
        C.   Requires that tax records be kept separately from accounting records.
        D.   None of the above.

9.   Transactions are recorded in an accounting system:

        A.   When there is an exchange between the firm and an outside party.
        B.   When management feels it is appropriate to do so.
        C.   Only when it will cause a net change in either assets, liabilities or owners' equity.
        D.   None of the above.

10.   With regard to owners' rights:

        A.   A corporation has a legal obligation to pay them a dividend every year.
        B.   They have a residual claim to the assets of the business.
        C.   Should the firm go bankrupt, the owners' initial investment in the firm is paid prior to that of the
                creditors.
        D.   None of the above.

11.   Which questions do you feel were easier to answer?

        A.   1-5.
        B.   6-10.

12.   Have you taken an accounting class before?

        A.   No.
        B.   Yes, in high school only.
        C.   Yes, I tried once before in college.

13.   How old are you?
        A.   25 or older.
        B.   Less than 25.

Appendix 3

Instrument Assessing Concept Retention

For each of the transactions given below, indicate the effect on assets, liabilities, stockholders' equity, revenues, expenses, and net income by entering a plus (+) for increase, a minus (-) for decrease, and a blank for no effect.

	Transactions	Assets	Liabilities	Stockholders' Equity	Revenues	Expenses	Net Income
A	Issued capital stock for cash.						
B	Performed services for a customer who will pay us later.						
C	Received a telephone bill for telephone service for this month.						
D	Received cash from the customer in (B)						
E	Purchased truck on credit						
F	Paid the telephone bill mentioned in (C).						
G	Recognized the depreciation on equipment						
H	Declared and paid cash dividends.						
I	Paid next year's insurance in advance.						

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