DO INTERACTIVE ONLINE ROLE-PLAY GAMES TEACH ECONOMICS?

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ABSTRACT

Entrepreneurial experience can bring many concepts in economics courses to life for students. However, few students who enroll in economics courses have had real-world entrepreneurial experience. Increasingly, students enrolled in economics courses have had virtual entrepreneurial experiences. Online role-play games in which players interact are virtual entrepreneurial laboratories. These games involve buying and selling of goods found in the online environment. Players of these games often take part in virtual businesses, involving finding/buying resources to use in production, producing goods, marketing goods, and selling goods. These games provide experience with a variety of economic concepts, including many concepts contained in the national curriculum standards for economics, developed by the National Council on Economic Education (in partnership with the National Association of Economic Educators and the Foundation for Teaching Economics). We explore the ways in which interactive online role-playing games might teach economics, with a concentration on the national standards. We also do a preliminary empirical investigation of whether game playing builds theoretical economic knowledge.

INTRODUCTION

In 1999 a division of Sony launched an online game called Everquest. As referenced by Castronova (2001), Sony revealed that the population of Everquest's world was 400,000. Those who played the game acquired virtual assets that were tradable, and some players auctioned these virtual assets for U. S. dollars (and other currencies) on Internet auction sites. Combining the auction data with data from surveys, Castronova estimated that per-capita GDP of Everquest's world was roughly the equivalent of Russia's per-capita GDP. Game players who sold in-game assets online in 2001 received an implied real wage $3.42/hour.

According to surveys by the PEW Institute, 70% of teens play online games (Lenhart, Madden, and Hitlin, 2005) and 39% of all internet users play online games (Fox, 2004). Also, from 2000 to 2002, the number of people who had played a game on the Internet grew by 45% (Madden and Rainie, 2003). Grobelnik, Holt, and Prasnikar (1999) muse that online games can "increase interest in and decrease skepticism about economic theory" (p. 211). The PEW surveys concerned all online games, including card games and board games. Grobelnik, Holt,

and Prasnikar (1999) refer to basic game-theoretic exercises played over a classroom computer network. We contend that more attractive games in a more natural setting could, in some respects, more effectively accomplish Grobelnik, Holt, and Prasnikar's aims. As Robert Shapiro (2003) asserts, "The similarities to real-world market behavior certainly owe much to the fact that EverQuest players know how real markets work and probably believe in markets."

Literature on interactive online role-play games aptly defines and describes the games and the game experience (especially Castronova 2003a; but also Castronova, 2001; Castronova, 2003b; Lo, Wang, and Fang, 2005; Hines, 2003; and Stephens, 2002). The customer base has been described briefly by Castronova (2001) and more extensively by Griffiths, Davies, and Chappell (2003). These games are called by many names, such as "virtual worlds" (Castronova, 2001), "Massively populated persistent worlds (MPPWs)" (Castronova, 2003b), or "Massively Multiplayed Online Games (MMOGs)" (Sony, 2005a; Sony, 2005b) or, simply, "online games" (Choi and Kim, 2004). Many of these names have subtle differences in meanings. In this paper, we will use the simple term "online games" to refer to the specific class of games which we will now describe.

As we shall use the term, "online game" refers to a game such as Castronova defines (above) in which a player assumes the role of a person and interacts over the internet with other players who have also assumed roles. The role that the player has assumed can be referred to as the player's "avatar" (a standardized term that is used in virtually all the literature on these games). We contrast this concept with more familiar concepts in other types of games. When we refer to a player's "avatar" we do not mean "white" in chess, "Xs" in tic-tac-toe, or "Britain" in a WWII wargame. A player's online persona or avatar is a single individual such as "Zahira, the ruler of the planet Vega 2," in a space-based online game, or "Cambren, the wizard from the burning sands," in a fantasy-based online game. The concept of the avatar is fully developed in Castronova (2003a).

This research focuses on the possible contributions of games similar to Everquest to economic education. We raise two questions. The normative question is, "Should games such as Everquest be used to teach the national standards in economics?" The positive question is, "Do games like Everquest teach the national standards?" With regard to economic education, we focus on a subset of the twenty national curriculum standards for economics, developed by the National Council on Economic Education (in partnership with the National Association of Economic Educators and the Foundation for Teaching Economics) and attempt to show examples of how examples from these games can be used to teach economics. Then we discuss some preliminary research that attempts to illuminate the positive question by showing that such games do teach economics.

In the following sections we discuss how the particular aspects of online games teach the national standards, we review the results of our preliminary study, and finally, we offer conclusions, including directions for future research.

HOW DO ACTIVITIES IN ONLINE GAMES TEACH THE NATIONAL STANDARDS?

We now discuss how the particular activities in which one engages while playing online games might be used to teach some of the national standards. A more detailed explanation of game activities is provided in Appendix IV.

Standard 2: Marginal Cost/Benefit

> *Effective decision making requires comparing the additional costs of alternatives with the additional benefits. Most choices involve doing a little more or a little less of something: few choices are "all or nothing" decisions.*

A player of an online game has many different ways to use time and virtual resources. For example, a player who wishes to purchase a new weapon finds that there are two different weapons on the market, with the better weapon marked at a higher price. The player must decide if the benefits of the better weapon are worth the added costs in terms of the extra sacrifice of gold required to obtain the better weapon. Another example, suitable for class might be the following: A player realizes that gold is valuable, but that increasing status, through gaining experience in quests, is also valuable. Hence, the player must decide if the status gained by spending one more hour in questing is worth the gold that must be sacrificed by taking that hour from his profitable time spent cooking food for other players.

Standard 6: Specialization and Trade

> *When individuals, regions, and nations specialize in what they can produce at the lowest cost and then trade with others, both production and consumption increase.*

Players recognize that the group structure, in which those with differing skills contribute to the success of the group venture, increases the rewards that accrue to the individual. Further, in crafting, players are forced to specialize (avatars must specialize in only one area of crafting, such as woodworking) and frequently trade with other crafting classes. Finally, trade takes place between advanced avatars and beginning avatars, based on their relative abilities. Trade examples from game experiences might include the following: A wizard defeats an enemy, taking from him a sword that is not usable by wizards. Since this sword is useful to a warrior, both the wizard and the warrior can gain if the wizard sells the sword in return for gold. Trade also takes place between those who band together to accomplish objectives. Within a group, a warrior, who specializes in the ability to absorb damage, voluntarily takes damage while a

wizard, who specializes in the ability to do damage, kills the enemy. In this way, players specialize and trade in order to seek rewards that are divided between group members.

Standard 7: Markets – Price and Quantity Determination

> *Markets exist when buyers and sellers interact. This interaction determines market prices and thereby allocates scarce goods and services.*

As discussed previously, players set prices for the goods they wish to sell in markets. For instance, with regard to resource markets, the price of harvested wood is determined by the willingness and ability of players to harvest wood and by the willingness of those who craft bows to purchase the wood. With regard to output markets, the price of the dragonlord's sword is determined by the willingness and ability of players to slay the dragonlord and sell his sword, and by the willingness and ability of potential buyers to buy the sword.

Standard 9: Role of Competition

> *Competition among sellers lowers costs and prices, and encourages producers to produce more of what consumers are willing and able to buy. Competition among buyers increases prices and allocates goods and services to those people who are willing and able to pay the most for them.*

Competition, in the economic sense, occurs throughout online games. Frequently online message boards contain examples of sellers lamenting the competitive pressures of the market while buyers are found who welcome it. Often serious players follow the price of articles in the various auction locations. Certain add-on software products aid such players in tracking the availability of important and often rare resources. A simple example of the concept of competition follows: If the dragonlord's sword is the strongest weapon that a warrior can use, that sword will be highly sought after by warriors, who will compete for it in the market, driving its price up.

Standard 14: Profit and the Entrepreneur

> *Entrepreneurs are people who take the risks of organizing productive resources to make goods and services. Profit is an important incentive that leads entrepreneurs to accept the risks of business failure.*

Players typically use the term "profit" to indicate the residual from production and sales, but view profit as a reward for labor, not as a reward for risk taking. The language of

"entrepreneurs" is not used. However, the games provide many examples of this standard. An armor crafter who finds that lowly warriors are not being served by other armorers has an incentive to invest in materials and devote valuable time to serving these warriors. This crafter will be rewarded with profit if he has correctly assessed the market, but takes the risk that he is wrong and will lose his time and gold. Online entrepreneurs also organize other players in order to enrich themselves. For instance, a player who devises a new strategy to defeat the dragon lord may assemble a team to implement this strategy, devoting time and effort to the campaign. If successful, this player will share in rich rewards, but takes the risk that the effort will fail. The balance between risk and reward is clear.

Standard 19: Unemployment and Inflation

> *Unemployment imposes costs on individuals and nations. Unexpected inflation imposes costs on many people and benefits some others because it arbitrarily redistributes purchasing power. Inflation can reduce the rate of growth of national living standards because individuals and organizations use resources to protect themselves against the uncertainty of future prices.*

It has been noted elsewhere that players are aware of the effects of inflation that result from unscrupulous players who exploit game programming weaknesses and duplicate items (BBC News, 2002). When a group of players finds a way to exploit the game world, duplicating valuable items and flooding the market with gold, this will cause prices to rise and will cause all players to adjust to the new price levels by changing their game activities. Other simple illustrations of this standard exist. For example, if players decide that they no longer wish to richly furnish their homes, furniture crafters will not be able to find work, resulting in losses to the game world until furniture crafters can find profitable alternative pursuits.

Standard 20: Monetary and Fiscal Policy

> *Federal government budgetary policy and the Federal Reserve System's monetary policy influence the overall levels of employment, output, and prices.*

There is no government budgetary policy in online games. However, monetary policy can be illustrated by looking at how non-player merchants affect play. Game designers place automated merchants in the game and set prices that these merchants pay for goods and charge for goods. If non-player merchants were programmed to pay three times their normal prices to players, then the increase in the supply of gold would cause all prices to rise or, if non-player merchants began to charge players three times normal prices to purchase raw materials, then the decrease in the supply of gold would cause all prices to fall. From the authors' observations,

players have an instinctive understanding of this idea. In addition, as noted in Standard 19, players realize that when unscrupulous players exploit game bugs, the money supply can expand and cause inflation. Castronova (2001), however, discusses the inevitability of deflation which derives from the durable nature of many goods in online games. Castronova also measured this deflation at 29% over a one year period during 2000-2001. Some of these problems with deflation have been mitigated in Everquest II because game designers made it impossible for an avatar to resell most of the durable goods which it has previously used. The games offer direct illustrations of this standard in practice.

Thus we find the online game experience provides the student with a context for understanding complex economic theory.

THE POSITIVE QUESTION: DO ONLINE GAMES TEACH ECONOMICS?

We conducted a survey of 51 students at Southern Arkansas University (SAU) who had not taken any courses in economics. The survey instrument was composed of two parts. The first part of the survey contained twenty questions which were meant to test students' knowledge of the twenty voluntary national standards. The second part of the survey contained questions which elicited demographic information, including previous business and work experience. The demographic data is described in Table 1.

Results

Column 3 of Table 2 contains some results of the twenty logit models. Each row of column 3 summarizes the results of one logit. Column 3 lists (1) the number of students who correctly responded to the question (2) the prob value (Significance level) of the logit, based on the chi-squared distribution (3) any variables whose coefficients were significantly different than zero at the .10 level, along with the sign of the coefficient. For instance, with regard to question 7, 88.2% of students answered correctly. Question 7's logit model's prob value was .544, indicating that the independent variables were not significantly related to the likelihood that the student obtained the correct answer to question 7 at any traditionally cited level of significance. The coefficient for the MIS Major variable was negatively related to obtaining a correct answer on question 7 at the .010 level of significance. No other dependent variables were significantly related to the likelihood that the student obtained the correct answer to question 7. We did not attempt to analyze whether variables had a large or small effect on the likelihood of answering questions correctly, through analyzing the partial derivative of the likelihood with respect to each independent variable.

The Online Game variable was significantly related to the likelihood of answering questions related to Standard 6 (trade and specialization), Standard 19 (unemployment and inflation) and Standard 20 (monetary and fiscal policy). In each of these three instances where

Online Games significantly influenced the likelihood that the student would answer the question correctly, the effect was positive. The strong incentives for specialization and cooperation in the structure of groups may cause Online Gamers to gain an understanding of Standard 6. The questions for both Standard 19 and Standard 20 relate to the effect of the money supply on prices. The game-wide effects that are caused by players who exploit game program bugs to duplicate items may be responsible for the both of these results.

CONCLUSIONS

This paper deals with two questions. For the first part we have shown how these types of games can be used to teach economic standards. The authors suggest that economics instructors consider incorporating examples such as we developed here as they attempt to make creative contact with students. We have provided multiple illustrations for eight standards to answer the normative question.

We do not find a definitive answer to the positive question—"Do online games teach the national standards?" We found that online games contributed to understanding of three of the twenty national standards. In particular, playing online games was associated with greater knowledge of the principle of specialization and trade and greater knowledge of the money supply's effect on prices. A larger more complete sample may yield more positive results.

With stronger findings, we might have informed economists that the increase in popularity of online games would be associated with better first-time economics students. But this would stop short of recommending online games as a teaching tool to accompany the course. Besides the expense involved in maintaining subscriptions, there may be harmful side effects to playing online games. It has been well documented (Choi and Kim, 2004; Chou and Ting, 2003; and Lo, Wang, and Fang, 2005) that the "flow" aspects of the games are addictive and may be related to neglecting other activities, such as studying. This is also consistent with Castronova's (2001) survey results on Everquest players. Thus, stronger findings would have pointed to a silver lining to a dark cloud, but not to an unambiguously strong teaching tool.

We have definite ideas for future research. First, our primary interest is in whether online games teach applied economics. The national standards were used to define the important points of the breadth of economics. Future research could make use of a subset of the applied economics questions contained in the Test of Economic Literacy (Walstad and Rebeck, 2001).

Second, a sample including more respondents who have more experience with online games might be obtained using searches of an online game's player database. Such a sample could be compared with a sample obtained from another source which contained fewer online game players, using appropriate statistical techniques.

Third, a future survey could elicit responses which could be used to build variables that control for the intensity of use of online games as well as the breadth of experience with online

games. In addition, the research would be strengthened by controlling for the intensity of computer use in non-gaming activities.

In the end our conclusion is twofold. First, the extensive of use of online games among young people argues strongly for their application in illustrating economic concepts in class. Second, the preliminary findings of our survey lead us to believe that more research will uncover unexpected development in students' understanding of economics based on their online game experience. Ironically the second finding tends to strengthen the first. Specifically, because the online experience appears to teach economics to the users it will be even more effective as an example to further that knowledge base when used in class. Hence the positive informs the normative.

This work was done with the assistance of a research grant from Southern Arkansas University. Though this work references economics standards developed by the National Council on Economic Education (in partnership with the National Association of Economic Educators and the Foundation for Teaching Economics), those organizations bear no responsibility for this research. Though this research refers to several online games, no online game company is responsible for this research.

Table 1: Descriptive Statistics

Variable	Mean	Std. Dev.
Male	50.98%	0.504878
Online Game	11.76%	0.325396
Age	22.04	6.154546
Cumulative Credit Hours	47.80	24.37459
Weekly Paid Hours	16.49	17.2932
Family Business Participation	17.65%	0.385013
Work in Business Occupation	33.33%	0.476095
Course Section 1	54.90%	0.502543
Fin/Acct Major	23.53%	0.428403
Mgt/Mkt Major	27.45%	0.450708
Mgt. Info. Systems Major	11.76%	0.325396
Other Major	37.25%	0.488294
Econ Score	56.67%	0.142361

Table 2: Survey Questions, Voluntary Economics Standards, and Results of Logit Estimations		
Question	Standard	Results
1. When resources are scarce, it is always the case that a. Many more resources will soon become available. b. Technological breakthroughs will immediately happen to relieve the scarcity. c. We must choose among alternative resource uses. d. Prices for the products that these resources produce will be low.	Standard 1: Scarcity Productive resources are limited. Therefore, people cannot have all the goods and services they want; as a result, they must choose some things and give up others.	Correct Answer 90.1% Significance level .0005 No coefficient significantly different than zero. Model perfectly predicted the dependent variable.
2. Elron is a tailor. If he wishes to maximize his profits, he should spend another hour making tailored goods if a. He can make at least one more coin from selling the tailored goods. b. He can make at least one more coin than the cost of his materials from selling the tailored goods. c. He can produce at least one unit of tailored goods in the next hour. d. An hour of tailoring pays more than an hour spent in his next best alternative use of his time.	Standard 2: Marginal Cost/Benefit Effective decision making requires comparing the additional costs of alternatives with the additional benefits. Most choices involve doing a little more or a little less of something: few choices are "all or nothing" decisions.	Correct Answer 39.2% Significance level .212 No coefficient significantly different than zero. (+) MIS Significance level is .108
3. In a market system, goods are allocated based on a. Who can acquire the goods first. b. Who is willing to pay the price for the goods. c. Luck. d. The choice of an agreed-upon leader.	Standard 3: Allocation of Goods and Services Different methods can be used to allocate goods and services. People acting individually or collectively through government, must choose which methods to use to allocate different kinds of goods and services.	Correct Answer 84.3% Significance level .107 No coefficient significantly different than zero.
4. If a productive activity suddenly takes longer to do than it did previously, a. Overall, people will put less effort into this activity. b. Overall, people will put more effort into this activity. c. Overall, people will put the same amount of effort this activity. d. People will cease to do the activity at once.	Standard 4: Role of Incentives People respond predictably to positive and negative incentives.	Correct Answer 64.7% Significance level .563 No coefficient significantly different than zero.
5. When Samuel and Jerika, who are both fully informed, agree on a price that Jerika will pay Samuel for a unique item, a. Samuel is made better off and Jerika is made worse off. b. Jerika is made better off and Samuel is made worse off. c. Both are worse off. d. Both are better off.	Standard 5: Gain from Trade Voluntary exchange occurs only when all participating parties expect to gain. This is true for trade among individuals or organizations within a nation, and usually among individuals or organizations in different nations.	Correct Answer 92.2% Significance level .194 No coefficient significantly different than zero.

Table 2: Survey Questions, Voluntary Economics Standards, and Results of Logit Estimations		
Question	Standard	Results
6. Individuals find more success overall if they a. Attempt to be equally good at everything. b. Ignore what they must sacrifice in order to attain their goals. c. Specialize at what they are best at and trade for things they are worse at. d. Do not waste time learning more about their profession.	Standard 6: Specialization and Trade When individuals, regions, and nations specialize in what they can produce at the lowest cost and then trade with others, both production and consumption increase.	Correct Answer 58.8% Significance level .004 (+) Role Playing Game significant at .058 (+) Credit Hours significant at .006 (+) Family Business significant at .085 (+) Business Occupation significant at .097
7. The market price of a good rises when a. Demand for the good rises. b. Supply of the good rises. c. Demand for the good falls. d. The cost of producing the good falls.	Standard 7: Markets – Price and Quantity Determination Markets exist when buyers and sellers interact. This interaction determines market prices and thereby allocates scarce goods and services.	Correct Answer 88.2% Significance level .544 (-) MIS significant at .010
8. If the availability of a resource used in production falls, then a. Prices will fall, since people no longer depend on the resource. b. Price will rise, encouraging potential buyers to find other alternatives. c. Price will fall, encouraging sellers to develop alternative supplies. d. Price will rise, encouraging potential buyers to buy more.	Standard 8: Role of Price in Market System Prices send signals and provide incentives to buyers and sellers. When supply or demand changes, market prices adjust, affecting incentives.	Correct Answer 52.9% Significance level .076 (-) Business Occupation significant at .010 (+) Management and Marketing significant at .068
9. Competition among buyers ensures that a. Goods go to those who are most willing to pay. b. Goods are produced in an efficient way. c. Prices will be low. d. They will have all of the good that they wish to consume.	Standard 9: Role of Competition Competition among sellers lowers costs and prices, and encourages producers to produce more of what consumers are willing and able to buy. Competition among buyers increases prices and allocates goods and services to those people who are willing and able to pay the most for them.	Correct Answer 56.8% Significance level .478 (-) MIS significant at .071

Table 2: Survey Questions, Voluntary Economics Standards, and Results of Logit Estimations		
Question	Standard	Results
10. For cooperative ventures to be successful, it is essential that a. The division of the potential rewards is well defined. b. All the participants are alike. c. Some of the participants are highly capable, while other participants are weaker. d. The goal of the venture should not be too well defined.	Standard 10: Role of Economic Institutions Institutions evolve in market economies to help individuals and groups accomplish their goals. Banks, labor unions, corporations, legal systems, and not-for-profit organizations are examples of important institutions. A different kind of institution, clearly defined and enforced property rights, is essential to a market economy.	Correct Answer 74.5% Significance level .932 No coefficient significantly different than zero.
11. Money is most likely not a. Something that is readily acceptable in transactions. b. Something that helps one compare the value of various goods and services. c. Something that holds its value well over time. d. A resource used to produce goods and services.	Standard 11: Role of Money Money makes it easier to trade, borrow, save, invest, and compare the value of goods and services.	Correct Answer 37.3% Significance level .531 (+) Management and Marketing significant at .034
12. The cost of spending money today, rather than in the future is a. The exchange rate. b. The interest rate. c. The price of the good. d. The unemployment rate.	Standard 12: Role of Interest Rates Interest rates, adjusted for inflation, rise and fall to balance the amount saved with the amount borrowed, which affects the allocation of scarce resources between present and future uses.	Correct Answer 21.6% Significance level .030 (+) Paid Hours significant at .043 (-) Management and Marketing significant at .074
13. Income depends on a. How much an individual produces per time period. b. The value of a unit of the goods or services that an individual produces. c. Neither a. nor b. d. a. and b.	Standard 13: Role of Resources in Determining Income Income for most people is determined by the market value of the productive resources they sell. What workers earn depends, primarily, on the market value of what they produce and how productive they are.	Correct Answer 64.7% Significance level .039 (+) Male significant at .008 (+) Age significant at .076 (-) Paid Hours significant at .044
14. Profit is the reward for a. Waiting to consume income at a later date. b. Expending labor in producing goods and/or services. c. Taking the risk of organizing productive ventures. d. Owning productive resources.	Standard 14: Profit and the Entrepreneur Entrepreneurs are people who take the risks of organizing productive resources to make goods and services. Profit is an important incentive that leads entrepreneurs to accept the risks of business failure.	Correct Answer 31.3% Significance level .095 (-) Credit Hours significant at .025 (-) Course Section 1 significant at .044

Table 2: Survey Questions, Voluntary Economics Standards, and Results of Logit Estimations		
Question	Standard	Results
15. To raise one's future standard of living, one might a. Increase the amount of goods consumed today. b. Increase the amount of services consumed today. c. Attempt to supply goods that are already abundantly being supplied. d. Acquire education or training.	Standard 15: Growth Investment in factories, machinery, new technology, and in the health, education, and training of people can raise future standards of living.	Correct Answer 70.6% Significance level .481 (-) Course Section 1 significant at .094 (-) MIS significant at .097
16. A policy that continually redistributes money from those who have more to those who have less will a. Eventually lead to increases in total wealth. b. Eventually lead to decreases in total wealth. c. Cause no eventual changes in wealth. d. Always be fair.	Standard 16: Role of Government There is an economic role for government in a market economy whenever the benefits of a government policy outweigh its costs. Governments often provide for national defense, address environmental concerns, define and protect property rights, and attempt to make markets more competitive. Most government policies also redistribute income.	Correct Answer 47.1% Significance level .324 No coefficient significantly different than zero.
17. The costs of a particular new policy exceed its benefits. This policy was most likely enacted because a. Of the actions of special interest groups. b. The policy's costs are large, but spread thinly over a large population, while its benefits are small, but spread thinly over the same population. c. The costs are small, relative to the benefits. d. The benefits are large, relative to the costs.	Standard 17: Using Cost/Benefit Analysis to Evaluate Government Programs Costs of government policies sometimes exceed benefits. This may occur because of incentives facing voters, government officials, and government employees, because of actions by special interest groups that can impose costs on the general public, or because social goals other than economic efficiency are being pursued.	Correct Answer 17.6% Significance level .487 (+) Course Section 1 significant at .069
18. Prices at which goods are eventually sold are determined by a. Sellers. b. Buyers. c. Sellers, together with buyers. d. Government.	Standard 18: Macroeconomy – Income/Employment and Prices A nation's overall levels of income, employment, and prices are determined by the interaction of spending and production decisions made by all households, firms, government agencies, and others in the economy.	Correct Answer 43.1% Significance level .790 No coefficient significantly different than zero.

Table 2: Survey Questions, Voluntary Economics Standards, and Results of Logit Estimations		
Question	Standard	Results
19. If the amount of money circulating in the economy rises, then in the long run a. Employment rises. b. The standard of living rises. c. Output of goods and services rises. d. Prices rise.	Standard 19: Unemployment and Inflation Unemployment imposes costs on individuals and nations. Unexpected inflation imposes costs on many people and benefits some others because it arbitrarily redistributes purchasing power. Inflation can reduce the rate of growth of national living standards because individuals and organizations use resources to protect themselves against the uncertainty of future prices.	Correct Answer 45.1% Significance level .702 (+) Online Games significant at .058
20. If the government reduces the quantity of money in circulation, then a. Prices fall. b. Prices rise. c. Interest rates rise. d. Inflation rates rise.	Standard 20: Monetary and Fiscal Policy Federal government budgetary policy and the Federal Reserve System's monetary policy influence the overall levels of employment, output, and prices.	Correct Answer 56.7% Significance level .009 (+) Online Games significant at .036 (-) Business Occupation significant at .006

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