Quizbowl: Success In and Out of the Classroom, a Five Year Study

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Abstract

Scores of US and Canadian universities' undergraduate students participate in the SS-AAEA Quiz-bowl competition annually. Surveys of the 2001 through 2005 competition participants suggest how beneficial competition preparation and participation are in completing related university work and indicate factors which enhance chances of success in the competition.

Key Words: economics education, quiz-bowl, games, learning techniques

JEL: A2, I21

Introduction

For many years, agricultural economic instructors have reported the benefits of games to the learning process. These advocated games are generally part of a structured university course and specific to one specialty within a discipline (e.g., Arellano et al, 2001; Crouter, 2003; Delemeester and Brauer, 2000; Gremmen and Potters, 1997; Hudson and Lusk, 2004; Lowry, 1999; Popp and Keisling, 2001). The Academic Quizbowl Competition (Quizbowl) of the student section of the American Agricultural Economics Association (SS-AAEA) provides students with an opportunity to test their skills across a wide range of agricultural economics topics outside of the university environment. Participation rates suggest that Quizbowl is popular with US and Canadian students. However, while students from some universities receive financial assistance, practice assistance and/or university credit for participating, students from other schools receive little or no assistance of any kind. As a result, some students have indicated that they are competing on an uneven playing field and that this uneven playing field impacts performance in the competition.

One reason for the lack of departmental support may be that the academic value of the competition has not yet been established. The purpose of this research was to determine students' opinions on how beneficial competition preparation and participation are in successfully completing related course work at their universities. In addition this research is expected to shed light on factors which, at least in the last five years, have enhanced chances of success in the competition. While analyzes are currently ongoing, this paper presents some of the more interesting preliminary results encountered thus far.

The SS-AAEA Quizbowl Competition

The SS-AAEA Quizbowl competition has been an annual AAEA event for nearly 20 years. The competition was introduced as a student team activity in the late 1980s. At the AAEA meetings, each team consists of three students from any given US or Canadian university[1]. The purpose of the Quizbowl game is to test students' knowledge in ten areas that have been arranged into eight categories: agribusiness/finance, US and Canadian agricultural policy/natural resource economics, macroeconomics, management, marketing, microeconomics, quantitative techniques, and a potpourri category which is often devoted to general agriculture issues or questions from the other seven categories. Each university can send a maximum of two three-person teams to represent their university. Any additional students who wish to participate will be placed on "mixed" (made up of players from two to three universities) teams.

A windows based software program was developed in the early 1990s for use in the game. This software was revised and then tested during the 2004 competition; it replaced the old version in the 2005 games[2]. Each round of play consists of 40 questions posed at five skill levels worth 5 to 25 points each. During a Quizbowl competition, the two teams sit on either side of a moderator and a computer operator. Categories, point values, scores and questions are projected onto a screen for Quizbowl participants, a moderator, two judges and the audience to see. Two judges are also provided with a laptop on which they can view suggested answers to

[1] Quizbowl activities were also added to the Student Section of the Southern Agricultural Economics Association meetings in the early 1990s. However, in this competition, students are randomly assigned to teams. Each three person team usually includes students from three different universities.

[2] The latest version of this Quizbowl software and sample questions/answers may be downloaded freely from the Student Section of the American Agricultural Economics Association website at http://www.aaea.org/sections/studentsection/Quizbowl.htm.

each question. The team who controls the board chooses the question. The first team to buzz in once the question appears on the board may answer. Correct answers will add to the team's score. Incorrect answers will take away from the team's score. The teams have 15 minutes to correctly (as determined by the two judges) answer as many questions as possible. The team with the most points at the end of the round wins. During the SS-AAEA Quizbowl competition, teams are eliminated from the competition after the loss of two rounds[3]. The last two teams remaining at the end of the one and a half day event compete one last time for the championship. In recent years, this championship game has taken place at the start of the AAEA meetings award ceremony.

Methods

Since 2001, all students participating in the Quizbowl competition each year were asked (but not required) to complete a survey to ascertain the benefits - both in and out of the classroom - of participating in the Quizbowl competition. The survey included over 20 questions related to: 1) the usefulness of preparing and competing in Quizbowl for understanding course topics, 2) the methods used and time spent to prepare for the competition, 3) their overall level of satisfaction with the Quizbowl experience, and 4) student information (e.g., class standing, grade point average, geographical region/name of their university and experience in previous years' Quizbowl competitions). In later years, questions were added regarding: 5) sources of funding for competition expenses and 6) opinions as to how funds provided by AAEA and its donors should be spent for the Student Section.

After each annual competition, email surveys were sent to each school's designated Quizbowl team advisor. This short survey included questions regarding: 1) financial assistance

[3] In the early 2000s, the competition was changed to triple elimination for two years only.

provided by the universities for student participation in quizbowl, 2) Quizbowl preparation assistance provided by university faculty, 3) the school's history of participation at the AAEA and SAEA Quizbowl competitions, 4) opinions regarding the usefulness of Quizbowl to classroom performance and 5) opinions as to how funds provided by AAEA and its donors should be spent for the Student Section.

Analyses of the survey results were conducted using the following procedures.[4] Data from student and advisor surveys were entered into an access database. The regional (Northeastern, Southern, Midwestern, Western, Canadian) distribution of student and advisor surveys was tested against the number and location (university) of actual student participants to determine if significant differences existed between the survey group and actual participants for any given year or for the five years combined[5]. Summary statistics were compiled for each variable. Most results are presented based on visual observations only. Statistical analyzes (to test for significant differences in responses across various groupings of respondents) are ongoing. Those results and accompanying discussion will be reported in future publications.

Student and advisor survey data were also used to identify factors which may contribute to success in the Quizbowl competition. A number of factors which can influence academic performance, (experience, intelligence, personality, gender, ethnic background, student effort (Dancer, 2003; Irandoust and Karlsson, 2002). In addition to these factors, the authors

[4] Data was analyzed on a per-year basis as well as for the five year total. Only the five year total analyses are presented here.

[5] University email addresses were available for most student surveys (in conjunction with prize money) and advisors. Email addresses were used to match students with their advisors. Once matched, email addresses/university names were deleted from the access data base, only regional information was retained.

speculated that university support (financial and study/preparation help) could also influence success. A Tobit model was constructed with success in the competition as the dependent variable. Success in the Quizbowl competition was measured as the percent of total games won.[6] Independent variables were chosen based on factors cited in the literature and the speculations of the authors. Intelligence was proxied by GPA, our best proxy available. Experience was proxied by both class standing and the number of SS-AAEA Quizbowl competitions in which the respondent had participated. Effort was measured by total preparation time measured in 8 hour days and whether or not the quizbowl software was used in preparation for the event. Gender was measured as Gender. Attitude was measured by satisfaction with the competition. Financial support was measured by whether or not a university provided any funds towards travel, hotel and/or meal expenses. Academic help was measured by two variables. The first was whether or not faculty had assisted students either in a formal classroom setting or outside of class to prepare for the competition. The second was measured by the number of university credit hours students received for participating in the event. Dummy variables were also included to represent a year effect. Preliminary results of all analyses and short discussions surrounding these results are presented below.

Results

Response Rates

Over the five years, 480 usable student and 77 usable advisor surveys were collected. This represents an overall response rate of 86for students and 76 percent for advisors. The regional distributions of student and advisor survey responses are presented in Figures 1 and 2.

[6] The total number of games played in any given year varied, thus a percentage of student wins to the total number of rounds used in the competition was used instead of total games played.

Interestingly there were no participants from schools in the Northeast in any of the five years of the survey. Tests of significant differences (X^2) for the entire five year period showed that there were no significant differences between the regional distribution of student survey respondents and regional distribution of student participants in Quizbowl. Furthermore, there were no significant differences between the regional distribution of advisor survey responses and the regional distribution of participating universities in the competition.

Profiles of Quizbowl Participants

The number of male respondents (265) was greater than female respondents (224). Students were asked to provide their class status as of August of that year of competition. Over the five years, upper classmen greatly outnumbered underclassmen. Twenty percent had recently (May or August) graduated[7]. Of those still in school, only 9 percent were new or continuing sophomores, 22 percent were new or continuing juniors and 49 percent were new/continuing seniors. No students listed themselves as continuing freshmen.

Roughly 90 percent of students listed their cumulative grade point average (GPA) as 3.0 or greater, out of a possible 4.0[8]. About 29 percent listed a GPA of 3.8 or greater. Only two percent listed a GPA of 2.5 or less. Sixty-three percent of the respondents were first time SS-AAEA Quizbowl participants when they filled out the surveys. Only 24 percent had ever participated in the similar competition held at the Southern Agricultural Economics Association (SAEA) annual meetings.

[7] Quizbowl rules allow for students who have recently graduated to participate in quizbowl as long as they have not yet taken any graduate level courses.

[8] All GPAs were converted to a 4.0 scale, if not listed as such originally

Student Preparation and Preparedness for Quizbowl Competition

Students were asked four questions to determine if they studied how often they studied, the length of each study session, and whether or not they used the Quizbowl software in their practice sessions. Thirty-four percent of students responded that they did not prepare at all for the Quizbowl competition. The remaining students listed total preparation times that ranged from 20 minutes to 240 hours. Of the 317 students who prepared for Quizbowl, 231 students (or 73 percent of those who prepared) used the freely available Quizbowl software as part of their practice regime.

Students were also asked how well prepared they felt for Quizbowl on a scale of 1 (to no extent) to 5 (to great extent). The distribution of responses is presented in table 1. The overall percentage of students reporting that they did not feel well prepared was greater than expected. However, as level of preparedness is likely related to study time, responses were re-analyzed by preparation time. First, respondents were placed into preparation categories ranging from 0 days of preparation to 10+ days of preparation. These categories and their distributions are presented in figure 3. Visual inspection suggests that the distribution of response is different across different preparation times; the greater the number of preparation days, the greater the percentage of responses at the "great extent" side of the scale.

Perceived Benefits of the Quizbowl to Understanding of Topics Covered in the Classroom

Students were asked in general, how well past competitions and all practice sessions had helped them to understand concepts and techniques covered in their classes. Students could rank the benefit from 1 (helping to no extent) to 5 (helping to great extent). The overall distribution is

presented in table 2. Responses were then grouped by number of preparation days. Here too, visual inspection seems to suggest that the greater the time spent in preparation for Quizbowl, the greater the perceived benefit to overall course understanding.

Students were then asked whether Quizbowl preparation and participation aided in understanding individual subjects covered in classes. The distribution of total responses is presented in table 3. Visual inspection suggests that students feel a lesser benefit from Quizbowl for policy, quantitative and natural resource topics, statistical analyses will soon follow. Distribution of responses was also grouped according to preparation days[9]. Visual inspection again supports that in general, the students perceive that their understanding of course materials can be greatly improved by preparing and participating in the Quizbowl competition.

Overall Satisfaction with the Quizbowl Experience

Finally, all student respondents were asked to rate their overall experience at the SS-AAEA Quizbowl competition from one (terrible) to five (excellent). This overall experience included lodging, Quizbowl facilities, competition organization, and opportunities to network with other students, graduate program faculty and potential employers. Overall most students were very pleased with their experience (table 4). It also appears that the greater the preparation days, the greater the percentage of those respondents reporting higher levels of satisfaction. When asked if they would recommend Quizbowl to their fellow students, 98% of all respondents over the five years said they would recommend it.

Factors Affecting Success in Quizbowl Competition

Results of the Tobit models are presented in table 5. Model one consists of all theorized variables. Surprisingly, gender, university credit and financial support for meals were

[9] Table has been omitted from paper due to its long length (contact the author for complete table)

insignificant. A second model was constructed without these three variables. In this second model, all but one (hotel) of the 16 included variables displayed the expected sign. All but two (sophomore standing and 2003 Year dummy) were significant at the P=0.10 level. Ten of the remaining 14 were significant at P=0.05. All variables were linear, except preparation days, which took on the quadratic form. As expected, this model showed that the number of wins at a Quizbowl contest is positively influenced by a number of factors. First, both the level of university academic experience and experience at previous SS-AAEA Quizbowl can influence wins. The higher a student's GPA the greater the probability of winning a game. The attitude variable suggests that the greater the overall level of satisfaction with the entire quizbowl experience (lodging, competition facilities, and networking opportunities) the greater the probability of winning a game. The number of days that a student devotes to preparation for the event, is highly important. But these reports suggest that efforts on the part of faculty and university administration can also influence success in the competition. First, faculty assistance in preparing for the event – whether it takes place in a formal classroom setting or outside class hours – can increase the probability of winning a game. However, it should be noted that offering university credit for this preparation/participation was insignificant. Secondly, any financial support for travel also increases the probability of winning a game; presumably because students do not have to focus as much energy on fundraising and can concentrate on other things such as preparing for the event.

Summary and Conclusion

This paper provides some of the preliminary findings associated with a five year survey of SS-AAEA Quizbowl participants and their advisors. It provides the first evidence of potential

benefits of Quizbowl preparation and participation to student understanding of course subjects. Results clearly indicate that students perceive that their understanding of economics-related courses can be enhanced through participating in the Quizbowl competition. Therefore, Quizbowl may not only be an event that students enjoy, but one that may enhance their academic performance. On-going analyses will examine whether that understanding is further enhanced with time devoted to preparing for the Quizbowl event.

Factors were also identified which can influence student performance at the competition. Not surprisingly, preparation time, use of quizbowl software, student GPA, class standing, previous Quizbowl experience and satisfaction with the entire Quizbowl experience were all important factors. Interestingly, faculty assistance in Quizbowl preparation and university financial support for hotel and transportation were also significant, although their coefficients are quite small.

The authors hope that all of the information presented above may be useful to university instructors and administers in determining how much academic and financial support for Quizbowl participants is appropriate.

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Table 1. Distribution of Responses to Preparedness, by Number of Preparation Days

		Percentage of Responses				
		Not Prepared				Well Prepared
Days	**No. of Obs.**	**1**	**2**	**3**	**4**	**5**
Overall	*478*	*21*	*18*	*34*	*19*	*8*
0	163	52	28	17	2	1
0.1 to 1	127	10	23	52	13	2
1.1 to 2	73	1	15	51	29	4
2.1 to 3	43	0	2	40	44	14
3.1 to 4	16	6	6	25	44	19
4.1 to 5	17	0	0	41	29	29
5.1 to 10	25	0	0	12	56	32
10+	14	0	0	7	29	64

Table 2. Distribution of Responses to General Helpfulness in Understanding Topics, by Number of Preparation Days

		Percentage of Responses				
		Not Useful				Very Useful
Days	**No. of Obs.**	**1**	**2**	**3**	**4**	**5**
Overall	*450*	*8*	*16*	*38*	*28*	*10*
0	146	20	24	37	17	2
0.1 to 1	123	6	19	42	29	4
1.1 to 2	70	1	10	43	36	10
2.1 to 3	42	0	12	38	26	24
3.1 to 4	16	0	0	50	25	25
4.1 to 5	16	6	0	25	50	19
5.1 to 10	24	0	0	21	50	29
10+	13	0	0	15	54	31

Table 3. Distribution of Responses to Helpfulness in Understanding Specific Course Topics

		Percentage of Responses				
		Usefulness of Quizbowl in Understanding Courses				
		Not Useful				Very Useful
Course	**No of Obs.**	**1**	**2**	**3**	**4**	**5**
Agribusiness	455	3.08	7.25	32.53	42.42	14.73
Management	447	3.8	8.5	36.02	35.79	15.88
Finance	446	3.36	8.97	38.57	16.59	32.51
Macroeconomics	465	2.8	10.54	34.62	34.62	17.42
Marketing	448	3.13	6.7	38.62	33.71	17.86
Microeconomics	462	3.03	8.23	31.6	36.58	20.56
Policy	436	8.94	17.43	31.65	26.38	15.6
Quantitative	455	10.99	16.92	33.85	25.27	12.97
Resource Economics	430	6.51	15.35	38.37	27.44	12.33

Table 4. Distribution of Responses to Satisfaction with Quizbowl Experience, by Preparation Days

		Percentage of Responses to Levels of Satisfaction with Total Quizbowl Experience				
		Not Satisfied				Extremely Satisfied
Days	**No. of Obs.**	**1**	**2**	**3**	**4**	**5**
Overall	*472*	*2*	*2*	*18*	*56*	*23*
0	159	3	3	19	58	18
0.1 to 1	127	2	2	17	58	22
1.1 to 2	74	0	0	23	55	22
2.1 to 3	42	2	2	19	52	24
3.1 to 4	15	0	0	13	47	40
4.1 to 5	17	0	0	18	41	41
5.1 to 10	24	0	4	13	46	38
10+	14	0	0	14	57	29

Table 5. Results of regression Models on Factors that influence Success in Competition

Variable	Model 1		Model 2	
	Coefficient	P-value	Coefficient	P-value
Constant	-14.3096	0.0837	-14.6439	0.0772
AAEA	1.9695	0.0720	1.9426	0.0745
GPA	10.2110	0.0000	9.8925	0.0000
Gender	-2.6270	0.1028	N/A	N/A
CurAAEA	2.1986	0.0323	2.2665	0.0279
Totimed	-1.9538	0.0146	-1.7598	0.0217
Totimed2	0.1776	0.0028	0.1648	0.0040
Software	6.7097	0.0015	7.0065	0.0008
Prephelp	4.9961	0.0203	4.8910	0.0221
Class45	4.0169	0.1820	4.0412	0.1796
Class67	5.2573	0.0616	5.3640	0.0574
Class8	7.2678	0.0206	7.6116	0.0152
Transp1	0.1467	0.0130	0.1583	0.0061
Hotel1	-0.1163	0.0393	-0.1183	0.0360
Meals1	0.0181	0.4539	N/A	N/A
Credit	1.1560	0.5404	N/A	N/A
Y2002	-7.5497	0.0015	-7.4944	0.0017
Y2003	0.0393	0.9877	-0.0835	0.9737
Y2004	-8.7862	0.0060	-8.4035	0.0087
Y2005	-3.8526	0.1413	-4.3946	0.0911

Figure 1. Distribution of Student Respondents by Geographic Region

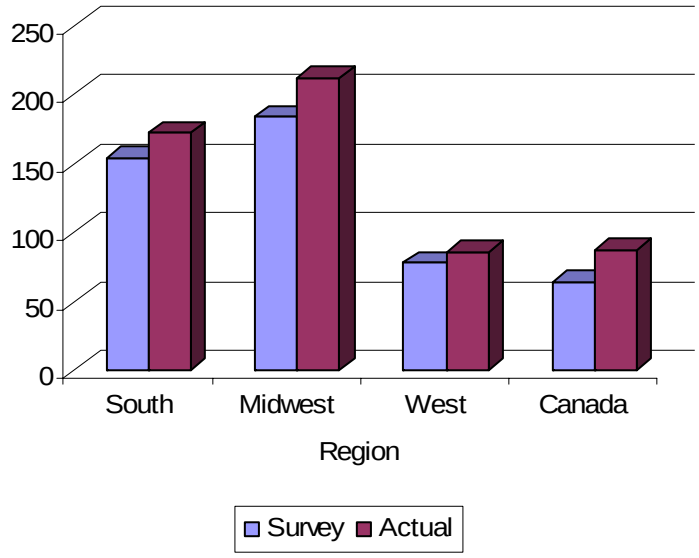

Figure 2. Distributions of Advisor Respondents by Geographic Region

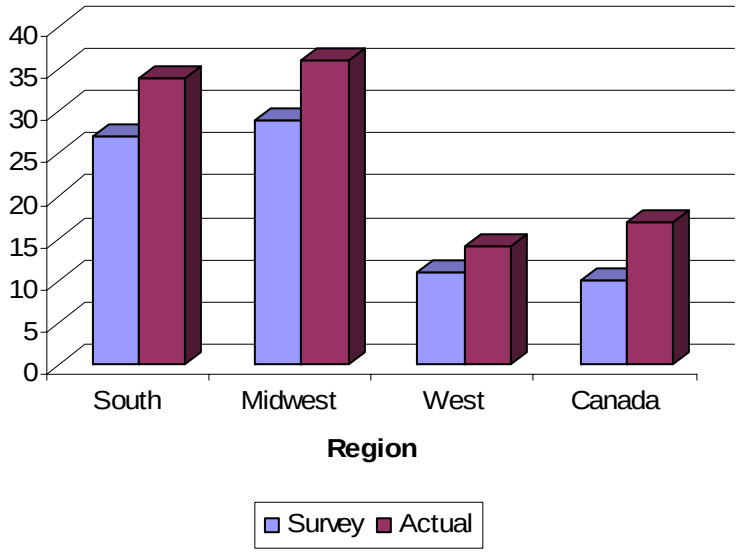

Figure 3. Distribution of Preparation Time in Eight-Hour Days