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The Exploration Sessions Report: November 2013 - September 2014

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The Exploration Sessions Report



November 2013 - September 2014

The Exploration Sessions Report

Abstract

Inspired by flexible curriculum at the University Laboratory High School (Uni High) in Urbana, IL, the Illinois Mathematics and Science Academy (IMSA) Student Council and History department collaborated to run a pilot program focused on the relationship between student input and interest in social studies courses. The concept of these “Exploration Sessions” was for the instructor to offer a few historical case studies related to a broad theme from the course syllabus and allow the class to vote for the one that interests them most. The resulting class sessions, tailor-made to the student vote, were assessed with a reflection survey mostly utilizing Likert scale ranks. Data analysis found that the opportunity to vote on course content generated a significant increase in mean student interest ($p = 0.024$) as well as significant increases in mean interest between regular class sessions and the custom Exploration Sessions ($p = <0.001$). A crucial concern with this method was that those students whose vote represented a minority opinion among the class would disengage from the Exploration Session. While the mean interest of those students was significantly lower than that of the students whose ideal topics were selected ($p = 0.014$) a significant difference from their mean interest in regular class sessions could not be identified. As long as the instructor can present multiple strong options of study for a common theme in the course, these results suggest that applying a similar format in the humanities classroom would have a net positive effect on student interest.

Introduction

At the University of Illinois Laboratory High School (Uni High) in Urbana, IL, the student body observed strong engagement with their History department. Uni High's student government attributed this to the flexible design of courses. Based on the interests of students in a given history class, Uni High faculty would adjust individual units to take on economic, cultural, military, and philosophical themes while still meeting common content. Furthermore, when common themes were essential, faculty would substitute historical case studies to tailor to student interests. This flexibility is rooted in **an instructional approach** designed by a Uni High faculty member that teaches history through thematic flowcharts. One product of the themes outlined in these flowcharts is the flexibility that Uni High has used to foster more personalized learning. Since this is a shared goal at the Illinois Mathematics and Science Academy (IMSA), our student government reached out to our own History faculty to experiment with a project that could mimic that content style. Six of the ten sections of the World in the Twentieth Century (W20) course, a required junior year history class that covers critical themes from the Enlightenment to the Cold War, participated in the pilot program. Dubbed, the Exploration Sessions, the experimental class sessions covered a broad theme from the course syllabus by offering two to four related historical case studies chosen by the instructor that the class could vote on. The most popular option earned two class sessions totaling 140 minutes for a special lesson compiled by the instructor. The metrics for the project investigated patterns in student input and engagement, generating several crucial questions:

- Does the process or even perception of being able to vote on course content increase the interest of students in a class?
- Can student input on course content engage students who claim not to be interested in history and the social studies?
- Would students whose topic of choice was in the minority of the class' vote disengage from the special lesson?

Methodology

Topic Offerings

The World in the Twentieth Century (W20) course was an ideal incubator for this project, because, as outlined in one IMSA faculty member's course syllabus, focus was placed on "some key concepts as a way of bringing coherence to a massive amount of material" (Smith, 2013). W20 covers broad themes like the foundation of modern ideas, imperialism and nationalism, and the bipolar world during the Cold War, all of which can be taught through different case studies, some of which, a particular group of students might find more intriguing than others. Some sample themes and case studies ultimately selected for the Exploration Sessions were:

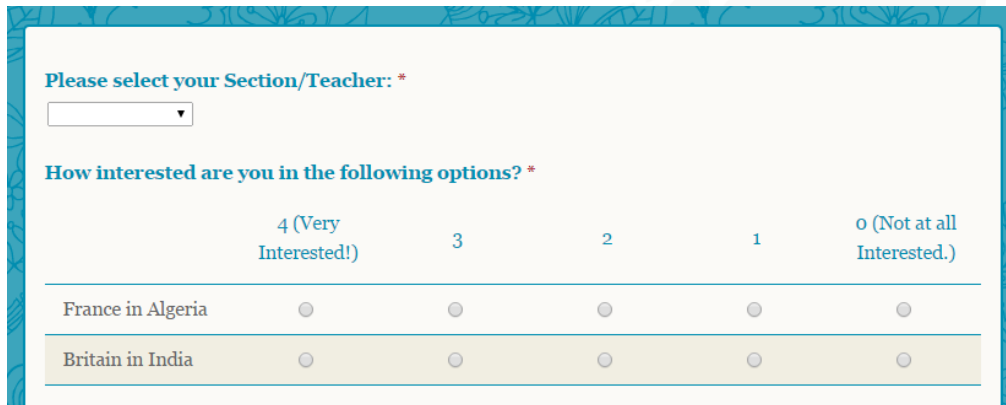
- European Empires and the Legacy of Colonialism (4 Sections)
 - Great Britain in India
 - France in Algeria
- Cold War Implications (1 Section)
 - The fall of the Berlin Wall
 - Oil and International Politics in the Persian Gulf
 - Nuclear Weapons, Iran, North Korea, and the Non-Proliferation Treaty (NPT)
- States and Democracies (1 Section)
 - China
 - Egypt
 - Canada

Topic Selection

Two weeks prior to the scheduled Exploration Session, Student Council representatives visited W20 classrooms to administer a brief selection survey. Rather than ranking the options with respect to each other, students rated each option individually with a Likert scale from 0 (Not at all Interested.) to 4 (Very Interested!). The goal of this was to allow the final tallies to aggregate

The Exploration Sessions Report

to a topic that members of the class found acceptable overall, even if it was not a student's first choice.



The screenshot shows a Google Forms interface. At the top, it says "Please select your Section/Teacher: *" followed by a dropdown menu. Below that, it asks "How interested are you in the following options? *". The options are presented in a table with a Likert scale from 4 (Very Interested!) to 0 (Not at all Interested.). The two options are "France in Algeria" and "Britain in India".

	4 (Very Interested!)	3	2	1	0 (Not at all Interested.)
France in Algeria	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Britain in India	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Figure 1. Voting question from session selection form with Likert scale item. Students were asked to rate each topic individually so that the final class selection would represent the topic that the class was most interested in, not the topic that the class preferred the most through rankings. This selection survey was created and administered using Google Forms.

Class Case Studies

- Great Britain in India
 - Students received background documents on the British Raj in India, including works such as the *Hind Swaraj*. The class also watched clips from Richard Attenborough's film *Gandhi* and then wrote a short paper discussing its portrayal of Gandhi's goals and imperialist culture.
- Nuclear Weapons, Iran, North Korea, and the Non-Proliferation Treaty (NPT)
 - Students were given a library of short expository articles from the online database ABC CLIO to read prior to the class sessions. Then, students worked in teams to apply the knowledge they gained about nuclear non-proliferation policy by writing mock white papers to be submitted to various governments.
- States and Democracies
 - This class added an additional twist to the base selection process, with the course instructor allowing the students to not only suggest countries to be

The Exploration Sessions Report

considered as session options, but to select any country they wished from the final list of offerings. Students took their approved country of choice and then wrote a short brief summarizing its structure. Because members had different countries, discussion during class session focused on similarities and common challenges in their governments.

Session Reflection

After the Exploration Sessions were completed, a Student Council representative visited the class again to administer a reflection survey containing both Likert scale and anecdotal items.

Part II

Please rate your level of interest with topics covered in this course during... *

	4 (Very Interested!)	3	2	1	0 (Not at all Interested.)
Regular class sessions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Exploration Session selection process	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Exploration Session	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Would you have preferred a topic for your Exploration Session other than those offered by your instructor? *

Yes
 No

If "Yes" above, please describe a topic you would have preferred.
Feel free to give details about the topic or multiple examples.

Figure 2. Reflection questions from the survey taken after the Exploration Sessions. *Likert scales were designed to mirror the structure of those in the selection form. Students answered questions in three categories: Respondent Information (RI), Session Interest (SI), and Course Aspects (CA). This reflection survey was created and administered using Google Forms.*

The reflection survey investigated three categories of items. The first, Respondent Information or the RI sequence, was used to identify students, especially in terms of their personal interest in History in general. The second, Session Interest or the SA sequence, was used to compare

The Exploration Sessions Report

students' interest ratings between different types of class sessions. The final category, Course Aspects or the CA sequences, was to gauge student opinions on several teaching and learning elements.

Table 1. Full listing of questions from reflection survey sorted by category. *Each category has a different prefixed key that will be used later on in the document to simplify reading. Most questions were Likert scale ratings, but text entry items were used to gather anecdotal responses as well.*

Key	Item	Type	Full Text
Respondent Information			
RI1	Class	Select	I am a...
RI2	Course	Select	Course
RI3	Teacher	Select	Teacher
RI4	Interest in History	Likert (0-4)	I am interested in History and Social Studies.
Session Interest			
SA1	Topic	Yes/No	Did the Exploration Session focus on the topic that you wanted most?
SA2	Regular Class	Likert (0-4)	Please rate your level of interest with topics covered in this course during... [Regular class sessions]
SA3	Selection Process	Likert (0-4)	Please rate your level of interest with topics covered in this course during... [Exploration Session selection process]
SA4	Exploration Session	Likert (0-4)	Please rate your level of interest with topics covered in this course during... [Exploration Session]
SA5	Alternate Topic	Yes/No	Would you have preferred a topic for your Exploration Session other than those offered by your instructor?
SA6	Preferred Topic	Text Entry	If "Yes" above, please describe a topic you would have preferred.

The Exploration Sessions Report

Course Aspects

CA1	Interesting Topics	Likert (0-4)	How important are the following aspects of a course to you? [Interesting Topics]
CA2	Manageable Workload	Likert (0-4)	How important are the following aspects of a course to you? [Manageable Homework/Projects]
CA3	Passionate Teaching	Likert (0-4)	How important are the following aspects of a course to you? [Passionate Teaching]
CA4	Collaborative Work	Likert (0-4)	How important are the following aspects of a course to you? [Group Work/Collaboration]
CA5	Student Selection	Likert (0-4)	Students should be allowed to select topics that are covered in a course.
CA6	Explanation	Text Entry	Please explain.

After results were collected, ordinal data tests were run on relevant data to analyze student feedback.

Data Analysis and Results

Below are charts and data analysis on the results of the selection and reflection surveys. Because the States and Democracies Exploration Session had additional modifications to its voting process, data analysis was conducted with both the complete data set as well as with a data set that excluded that section's results. The results remained unchanged even after excluding that data, so these results have been reported using the full sample size of 113 W20 students. However, a chart with the results of the States and Democracies session topic selection was not produced, since the students were allowed to choose any of the final topics.

Selection Data

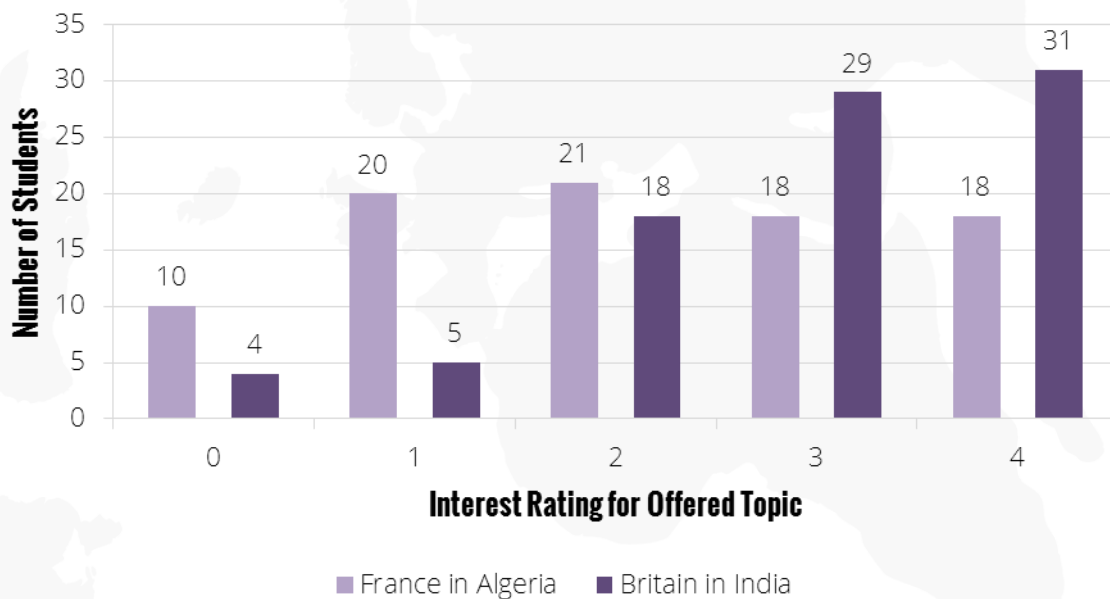


Figure 3. Frequency of student interest ratings for the two topics offered in the European Empires and Legacy of Colonialism Exploration Session voting process. All four sections that participated in this Session selected Britain in India. This figure represents their combined ratings that show broad interest in the chosen topic while only mediocre interest in France in Algeria.

The Exploration Sessions Report

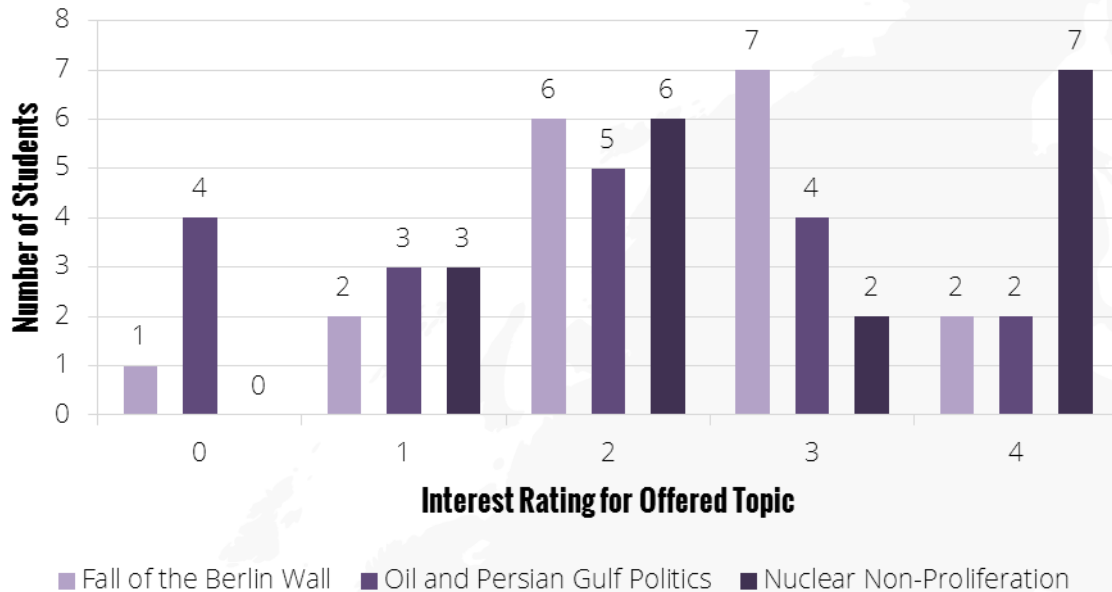


Figure 4. Frequency of student interest ratings for the three topics offered in the Cold War Implications Exploration Session voting process. *In this section, Nuclear Non-Proliferation edged out the Fall of the Berlin Wall in voting. This is notable because the former did not receive any 0 ratings, meaning every single student in the section reported some interest in the topic. However, the latter topic did not receive any 4 ratings, meaning that no student was completely interested in voting for it.*

Reflection Data

Each data set analyzed corresponds to an important null hypothesis for this pilot program. Data sets are sorted by the item keys from Table 1 and listed with their null hypothesis and the statistical result. It is important to note that most data for this project came in the form of Likert scale ratings, and thus, a rating of 4 does not necessarily indicate twice as much value as a rating of 2. Because of this, parametric methods such as t-tests were not appropriate to analyze the data. Instead, non-parametric analysis was used. Two-tailed p-values were used to assess thresholds. A three-way Friedman test was used to determine if the interactions between SA2, SA3, and SA4 were significant, and from there, Wilcoxon Signed-Ranks tests were used to determine if the means of each of the dependent data sets were significantly different.

The Exploration Sessions Report

SA2 vs SA3 - Interest from Regular Session to Voting

- **Null Hypothesis:** There is no significant difference between a student's level of interest in the course topics during regular class sessions and their level of interest in the course topics during the voting process. (0.05)
- **Result:** Rejected Null Hypothesis (Wilcoxon Signed-Ranks: $ss = 113$, two-tail $p = 0.024$)

SA3 vs SA4 - Interest from Voting to Exploration Session

- **Null Hypothesis:** There is no significant difference between a student's level of interest in the course topics during the voting process and their level of interest in the course topics during the Exploration Session. (0.05)
- **Result:** Rejected Null Hypothesis (Wilcoxon Signed-Ranks: $ss = 113$, two-tail $p = 0.042$)

SA2 vs SA4 - Interest from Regular Session to Exploration Session

- **Null Hypothesis:** There is no significant difference between a student's level of interest in the course topics during regular class sessions and their level of interest in the course topics during the Exploration Session. (0.05)
- **Result:** Rejected Null Hypothesis (Wilcoxon Signed-Ranks: $ss = 113$, two-tail $p = <0.001$)

Spearman Rank-Order Correlation tests were used to gauge correlation between data sets non-parametrically.

RI4 vs SA4 - Interest in History and Interest in Exploration Sessions

- **Null Hypothesis:** There is no correlation between a student's interest in History and Social studies and their level of interest in course topics during the Exploration Session. (0.95)
- **Result:** Failed to Reject Null Hypothesis (Spearman Rank-Order: $r_s = 0.529$)
- **Baseline:** Spearman Rank-Order Correlation for RI4 vs SA2: $r_s = 0.499$

The Exploration Sessions Report

Mann-Whitney Tests were used to determine if the means of unequal sample sizes were significantly different non-parametrically.

SA5 vs SA4 - No Interest in Topics Offered

- **Null Hypothesis:** The level of interest in course topics during the Exploration Session of students who preferred a topic other than those offered by the instructor is not significantly different from the level of interest of the students who did not prefer an alternate topic. (0.05)
- **Result:** Fail to Reject Null Hypothesis (Mann-Whitney: $ss = 113$, two-tail $p = 0.211$)

SA1 vs SA4 - Interest in Topic Eliminated during Voting

- **Null Hypothesis:** The level of interest in course topics during the Exploration Session of students who preferred a topic other than that selected by their class is not significantly different from the level of interest of the students whose favored topic was selected. (0.05)
- **Result:** Reject Null Hypothesis (Mann-Whitney: $ss = 113$, two-tail $p = 0.014$)

Because the mean interest of students whose first choice topic was eliminated was significantly lower than that of their classmates, a Wilcoxon Signed-Ranks test was run to see if the former set of 37 students saw a significant change in interest between sessions.

SA2 vs SA4 - Interest of Students for SA1 being “No”

- **Null Hypothesis:** For students whose first choice topic was eliminated during voting, their level of interest in course topics during regular class sessions is not significantly different from their level of interest during the Exploration Session. (0.05)
- **Result:** Fail to Reject Null Hypothesis (Wilcoxon Signed-Ranks: $ss = 37$, two-tail $p = 0.638$)

Charts

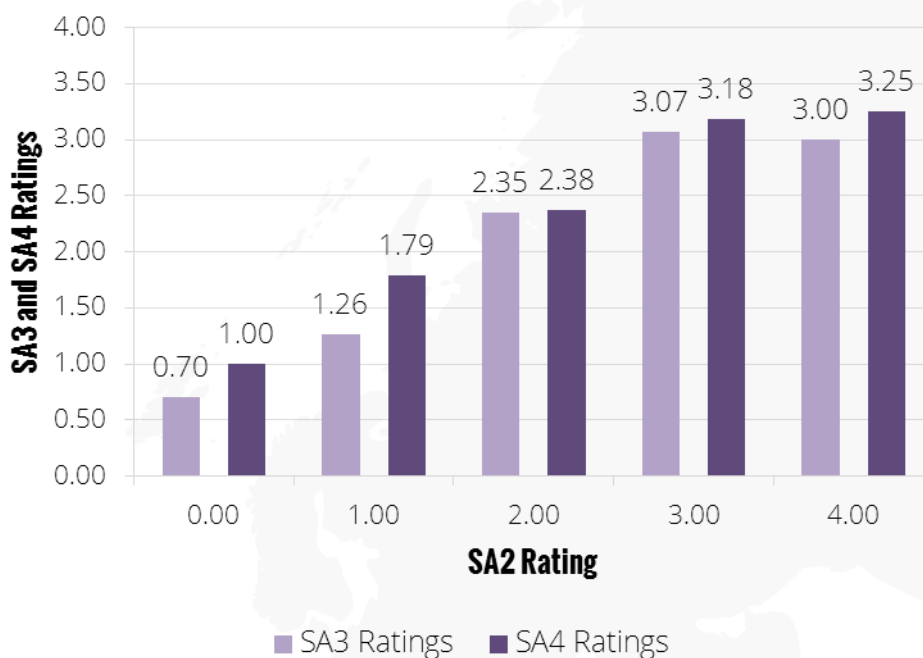


Figure 6. Students' interest ratings during topic voting (SA3) and the experimental course session (SA4) organized by their rating of interest in regular course sessions (SA2). All ratings from 0 to 3 show an average increase in interest as the pilot program continued. The group of students who rated their regular interest in the course at 4 saw an average decrease, but still finished with the highest average rating of interest after the Exploration Session took place. Statistical analysis showed significant increases in interest between each session.

The Exploration Sessions Report

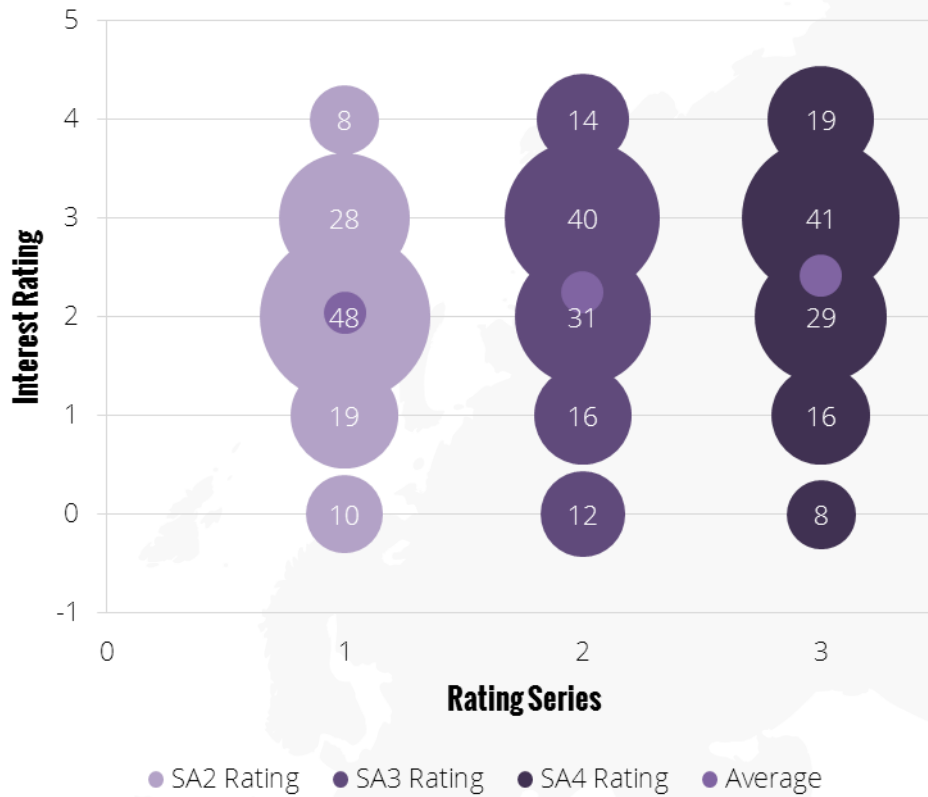


Figure 7. Frequency of students' interest ratings during regular course sessions (SA2), topic voting (SA3), and the experimental course session (SA4). *The distribution of student interest ratings appears to shift upward from session to session. Students reported average interest ratings of 2.044 during regular course sessions, 2.248 during the voting process, and 2.416 during the Exploration Session. Statistical analysis showed significant increases in interest between each session.*

The Exploration Sessions Report

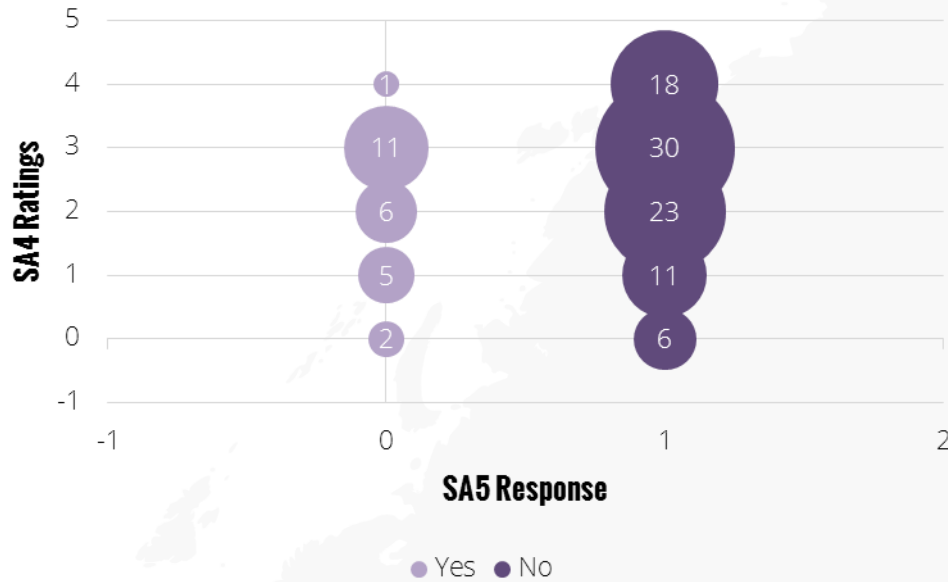


Figure 8. Students' interest in the Exploration Session (SA4) sorted based on whether or not they preferred a topic other than those offered by their instructor for voting (SA5). *Roughly 22.124% of sampled students responded "Yes," meaning that they were not fully satisfied by the topics in the voting process. However, statistical analysis did not find a significant difference between those students and their classmates who were satisfied with the voting options ($p = 0.211$). One element to account for the lack of a significant difference is that many students who responded "Yes" simply wanted to add other options to the already interesting topics offered.*

The Exploration Sessions Report

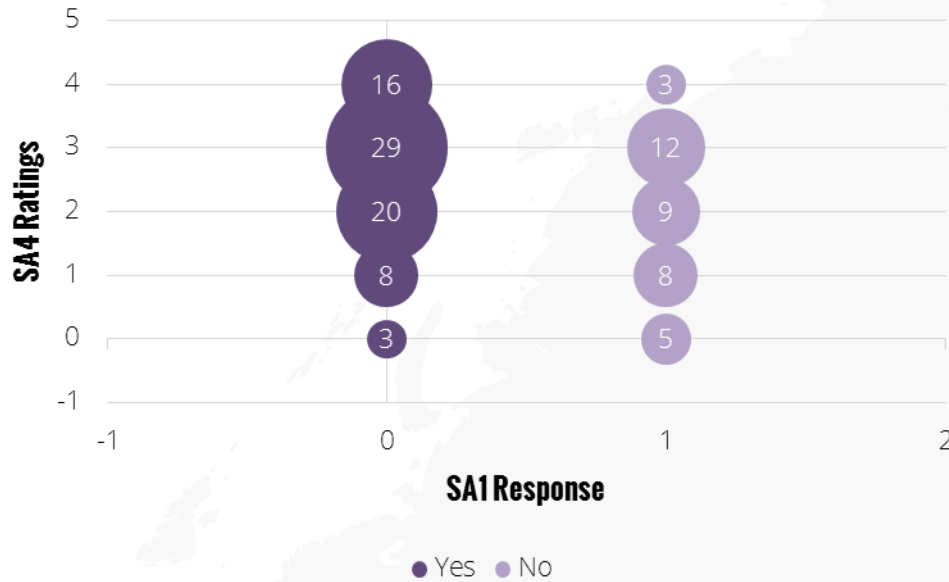


Figure 9. Students' interest in the Exploration Session (SA4) sorted based on whether or not their class selected their first choice topic during voting (SA1). Roughly 67.257% of sampled students responded "Yes," meaning that their favorite option was selected in the voting process. However, statistical analysis uncovered a significant difference in the interest ratings of the students whose first choices represented minority opinions ($p = 0.014$). This suggests that students who did not receive their first choice option were not as satisfied as their classmates during the Exploration Session.

The Exploration Sessions Report

Discussion

One of the key inquiries in this experiment was whether a relationship between input and interest existed. The significant increase in mean interest from regular course sessions (SA2) to the Exploration Session (SA4) suggests that the instructors' attempts to offer multiple case studies and design lesson plans tailor-made to the results of the class vote were successful in increasing student engagement. Furthermore, the significant increase in mean interest from regular course sessions (SA2) to the voting session (SA3) also suggests that simply the opportunity to provide input on course content had a positive effect on student input. However, the other side of this of this outcome is that the students whose choice topics were not selected by their class overall saw significantly lower mean interest when the Exploration Session came. If we take these students to be "dissatisfied" with the outcome of voting, further analysis of just those students shows that there was not a significant change in their interest between the regular course sessions and the Exploration Session. While it may seem almost utilitarian, the structure of the experimental class session was accompanied by higher interest among the students satisfied with the results of voting and no significant change in the interest of their "dissatisfied" peers.

However, neither the regular class sessions nor the Exploration Sessions held a significant correlation in interest with students' self-reported interest in History and Social Studies in general. Because IMSA is a primarily Math and Science-oriented school, this may make sense. Still, the lack of correlation, as well as anecdotal responses to the reflection survey, suggest that some students may have voted for topics that were most familiar to them. Students may have covered topics like "Great Britain in India" in middle school and freshman year history course before they came to IMSA. With this, a familiar topic may be more favorable and interesting to students, but not necessarily what the course instructor seeks to introduce them to. Future iterations of the Exploration Session and other studies on this topic should investigate students' decision-making processes when voting to better assess such concerns. If a similar structure to the Exploration Sessions is to be implemented elsewhere, the teacher

The Exploration Sessions Report

should offer topics that not only connect to the theme in their syllabus, but can engage their students with new content. A less ubiquitous topic like “France in Algeria” is still likely to draw the interest of students who wish to learn more about France or African nations, but it is interesting because it relies on curiosity more so than familiarity. The lack of a statistically significant difference in mean interest in the Exploration Session between students who were not satisfied with their instructor’s topic offerings and their classmates who were (SA5 vs SA4) indicates that students are comfortable with their instructor choosing the topics to be offered for voting. The instructor’s wisdom in this process should prevent the class from selecting a repetitive or unperceptive topic for their theme. It would be admirable for other history teachers to generate student interest by identifying broad themes in their syllabi and affording their students a chance to influence the direction of the course content.

An important disclaimer is that this style of input is most likely to work in the humanities. Math and Science classes tend not to provide as much flexibility as the do content that Uni High and IMSA History teachers leveraged with their classes. Yet, one Exploration Session-like twist that can be applied to any class is to experiment with variable methods within the classroom, rather than variable themes and topics. Dr. Howard Gardener’s work with multiple intelligences argues that students can personalize their learning by taking on different types of assignments that better fit their personal preferences. Visual, auditory, and kinesthetic learning are also thought of as different approaches to teaching and learning. It would be interesting to see a teacher pivot their instructional approach based on the learning style preference of their class, at least for one lesson. Much like selecting topics by class preference in the Exploration Sessions, the class would still have to deal with issue of balancing the interests of those students who end up representing a minority after voting. The lesson plans created by the IMSA History faculty for the Exploration Sessions represented a combination of visual, auditory, and kinesthetic methods, from movies and reports to discussions and simulated white papers. An improvement on this experiment would be to gauge how students responded not just to the themes and topics presented to them, but to the instructional practices and assignments in their Exploration Session.

Conclusion

Based on results of this pilot program, we encourage W20 teachers and other humanities teachers to add an Exploration Session to their course syllabi. The following criteria can help ensure that a unit or theme is a strong candidate for such a session:

Session content is not considered core. A class should not miss compulsory content because they voted for an alternate topic. Case studies should also be of approximately equal significance to the course so that students do not worry about losing content when voting.

Session presents new content to students. One concern with this project was that students would simply vote for topics that they had learned about before. Choosing diverse or even “obscure” case studies can help avoid such situations. Even topics that are familiar to students can be made unique by presenting a new perspective on the subject.

Similarities exist between case studies. To generate interest among students whose favorite choice is not selected by the class, the instructor could choose case studies with similar elements so that the final result does not dramatically isolate a part of the class.

Case studies can integrate into the rest of the course. The ultimate goal of the Exploration Sessions is to provide students with input on the direction of the course and increase interest in its topics. If the case study from a successful Exploration Session connects well to topics in the remainder of the semester, that momentum may be carried over as well.

The Exploration Sessions presents a promising model of student input and interest in the humanities classroom. Hopefully, after this project, IMSA faculty and students can continue to collaborate on observing and experimenting with these and other aspects of course dynamics through pilot programs and other forums for academic innovation.

Acknowledgments

The Exploration Sessions project is the first student-led pilot program at the Illinois Mathematics and Science Academy. Our Student Council wishes to thank the many people who embraced the concept, pushed the project forward, and helped develop this innovative partnership between students and faculty.

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