IF YOU GAME IT, WILL THEY LEARN?

Fostering Student Autonomy, Motivation, and Reflection Through A Gamified Course Design

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BACKGROUND
Political Science 101

In the age of Google, facts and information are less than dime a dozen. Higher education, even at the gateway course level, should not focus on information provision, but on helping students take charge of their own learning, take initiative, solve problems, and learn to exercise sound judgment.

Since 2009, LaVaque-Manty has radically restructured all his teaching, but particularly that in his annual gateway course, Introduction to Political Theory, Political Science 101. The overall approach is often called **gamification**: the application of the structures, rules, and logics encountered in games to non-game contexts. The course emphasizes optional paths to satisfying requirements, nonstandard instruments (blogging, videos, games, posters), student collaboration, and safe failures. There have been differences between the iterations of the course, but the key element is a stress on student reflection and choice. The innovation fosters broad autonomy through the more specific pedagogical strategies of metacognition and self-regulated learning. The course takes advantage of varieties of technological innovations, but the pedagogy doesn't require any fancy technology.

The key features of the course are that students accumulate points ("level up") with every task they undertake, have the ability to sample between different types of major assignments and choose which ones they want to commit to, and how to weight their choices. Below is the structure of the course in Fall 2013.

Common Assignments:

		Total possible points
READINGS	Twice/week	7800
LECTURES	Twice/week	2600
DISCUSSIONS	Once/week	7000

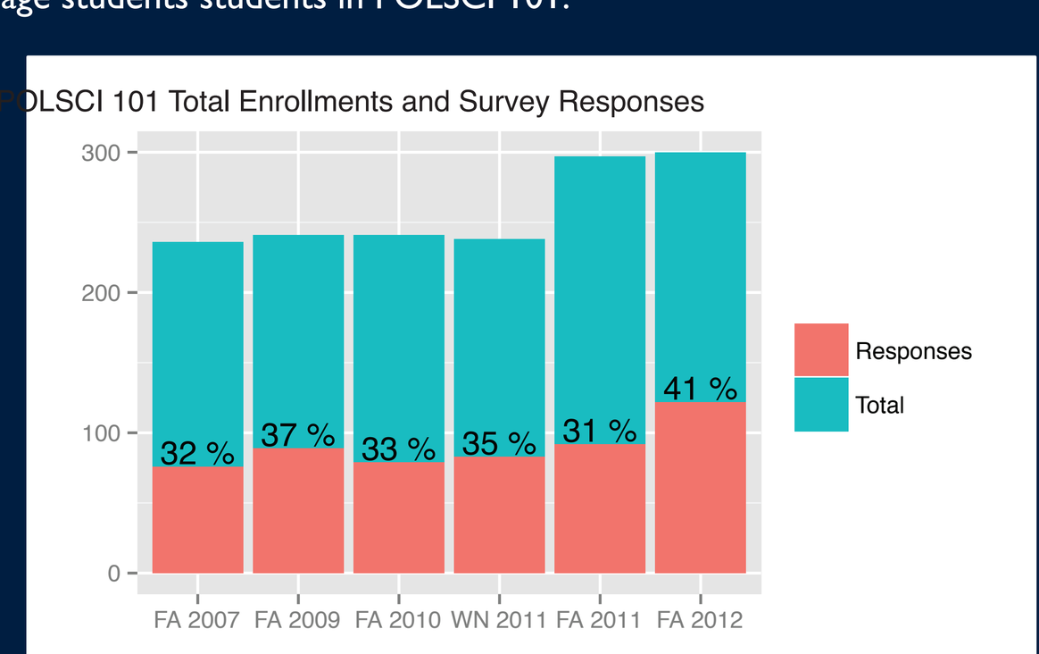
Optional assignments: students sample, then choose two:

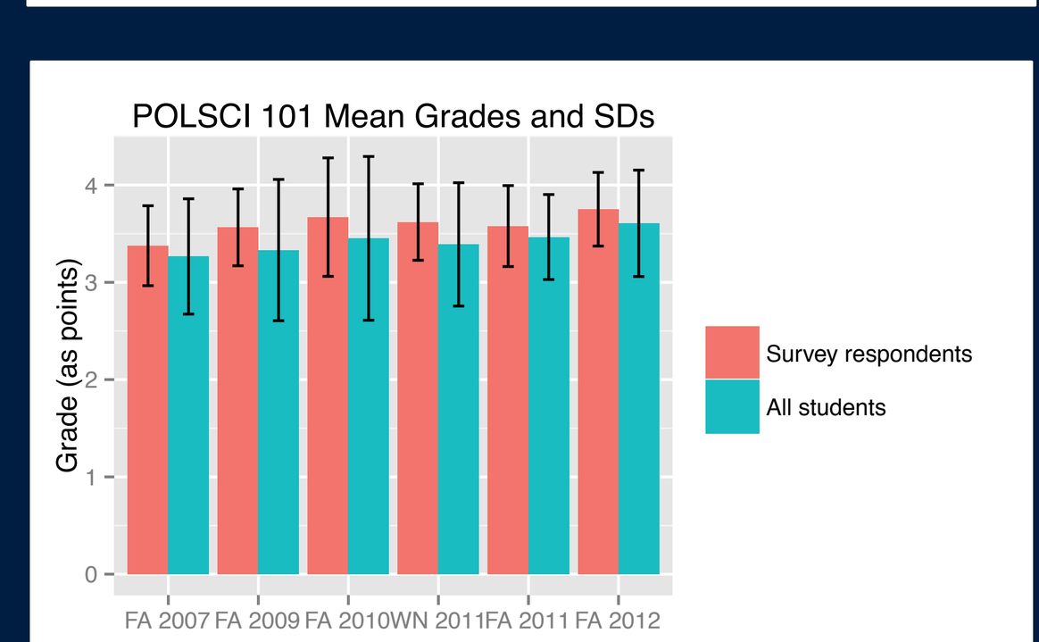
CONVENTIONAL ESSAYS	Two/semester	5000–20000*
BLOGGING	Four posts Ten comments	5000–20000*
GROUP PROJECT	Scaffolded: Proposal, reports, deliverable	5000–20000*
"PSEUDO EXAMS"	Four/semester	5000–20000*

* Depends on the student's decision how to allocate her six point multipliers.

INVESTIGATING POLSCI 101

Beginning in summer 2013, we surveyed all of LaVaque-Manty's 101 students between Fall 2007 and Fall 2012. This included each of the five gamified iterations and the final non-gamified iterations for a total of 1,600 students. We received a roughly third-of-total response rate for each course. The survey respondents had been, on average, slightly better than average students students in POLSCI 101.





Based on their responses to the open-ended questions on the survey, about twenty survey respondents were contacted for follow-up interviews, conducted by Ghattas via email and phone.

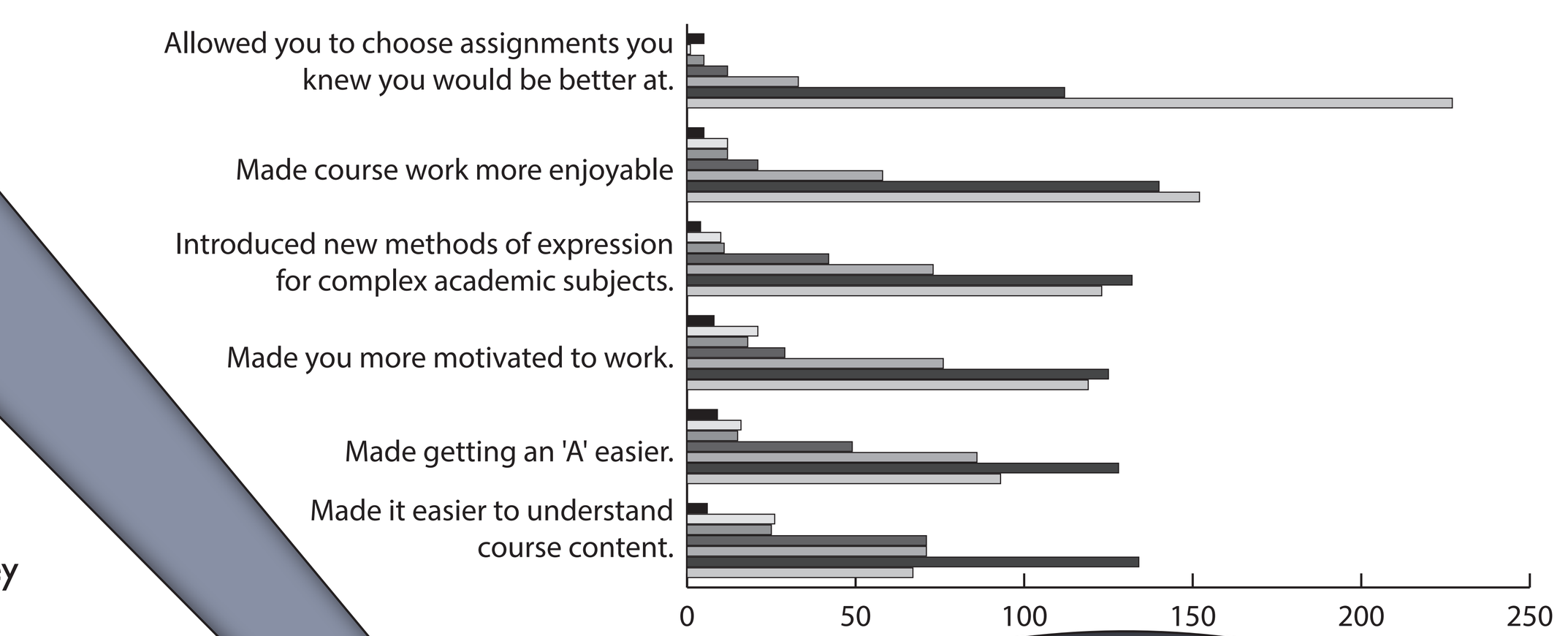
The circle on the right reports our most significant findings.

AUTONOMY

"I honestly cannot remember a time that I felt frustrated or deceived...I felt very much in control of and accountable for my own grade, and I found it absolutely true that if you made an effort to actively learn and engage with the course concepts, there was no way to do poorly in the course." (Student response in a follow-up interview.)

Both in their answers to quantitative survey questions and in their open-ended comments, students reported that they found the choices in the courses gave them a greater sense of autonomy. The graph below depicts the students' responses to the question **"The gamified structure of the course did which of the following for your?"** We regard it as positive that the students felt they could choose assignments at which they felt competent. Note also that the autonomy-fostering dimension is not inconsistent with their motivation to get a good grade.

Student choices to the question were non-exclusive. The items are reported in a decreasing order of agreement median. That is, the most valuable dimension, based on the student agreement, is at the top, and so on.



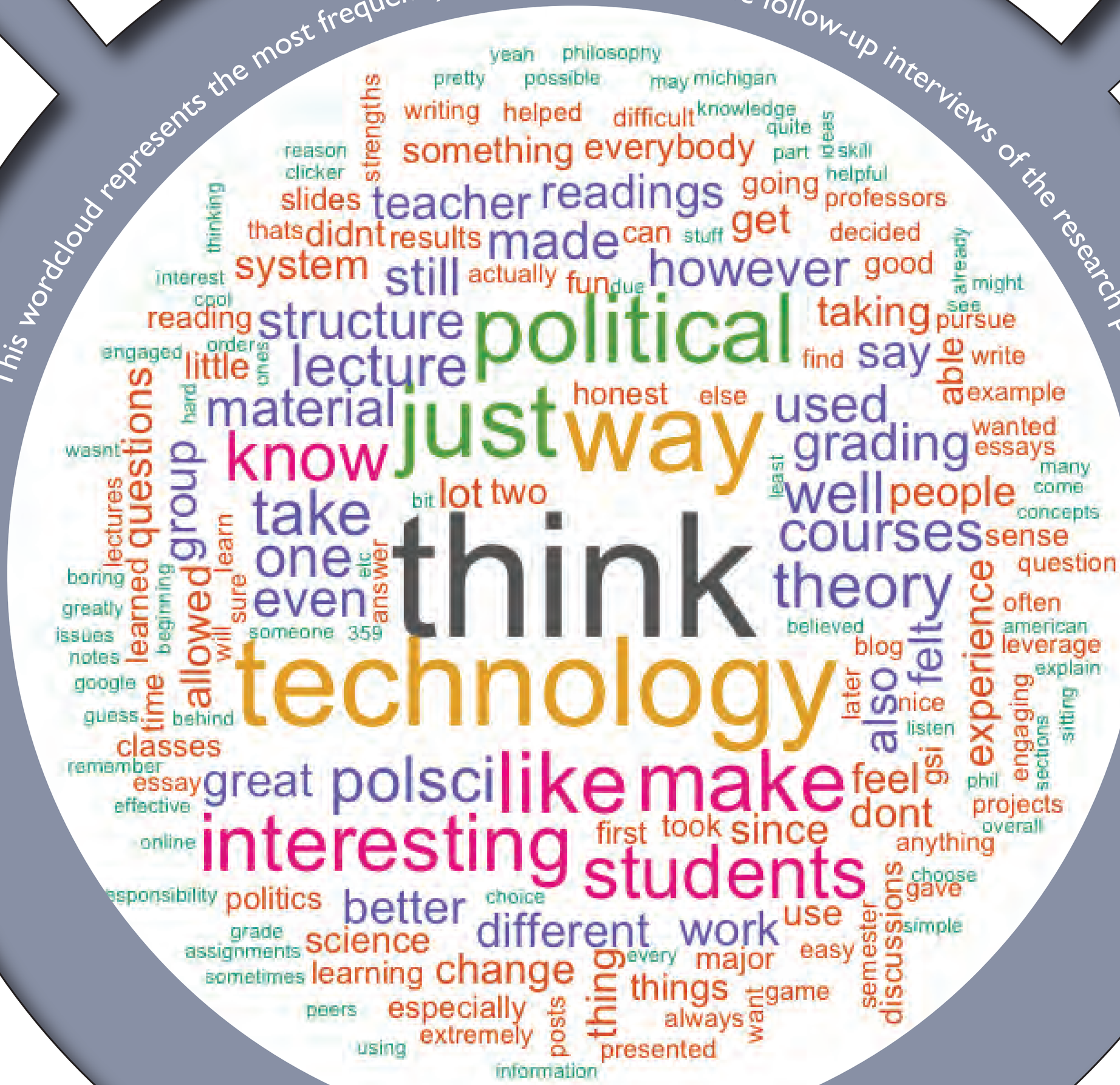
COLLABORATION

Collaboration worked in several ways in the course. On the one hand, gamification *presupposes* some degree of collaborative activity. On the other hand, *increased* collaboration and collaboration skills were results of the gamified structure. The students had to consider whether they wanted to engage in a collaborative group project and, if so, what they could bring to the collaboration.

Even students who did not choose group projects had to and got to engage in various kinds of collaboration: in-class problem solving activities and contributing to the course blog discussions. None of these are unique modes of collaboration, but by making collaboration a choice, students became more reflective about it in general.

"The State of Nature: A Game That is Nasty, Brutish, and Short," by Barney, Dantus, Faust, Tirpak, Petroni, and Hansen from Fall 2009. In POLSCI 101, students are free to propose the medium for their group project. Nobody had done or even suggested a board game as a possibility, but this group proposed one and created a game whose rules masterfully replicate the logic with which humans act in the "state of nature," according to Thomas Hobbes.

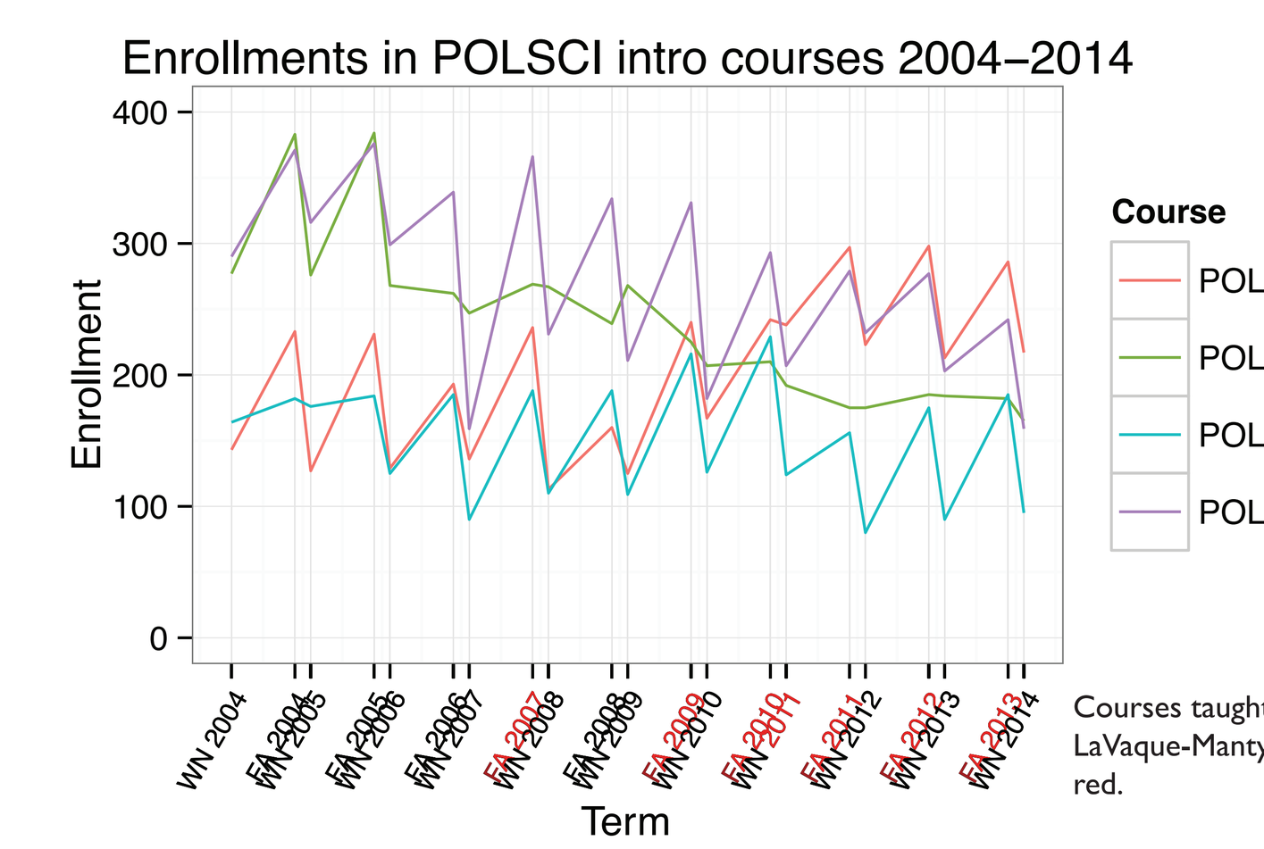
This wordcloud represents the most frequently occurring words in the follow-up interviews of the research project.



EXTERNALITIES

We have highlighted the benefits students report they have gained from the gamified approach of POLSCI 101. Some evidence suggests that instructors will also benefit from the approach. Student evaluations of the course have been strong throughout, even though the approach does also bewilder some students, at least at first.

Also, in comparison to enrollments in the other introductory Political Science courses, 101 appears to be bucking a trend of declining enrollments. (Although it is important to point out that LaVaque-Manty is not the only instructor for the course and that winter-term enrollments are invariably lower than in the fall.)



MOTIVATION

Students are motivated by grades, whether we want it or not. One of the central goals of the gamified course design is to convert the extrinsic motivator of grades into more intrinsic — or at least more reflective — motivation.

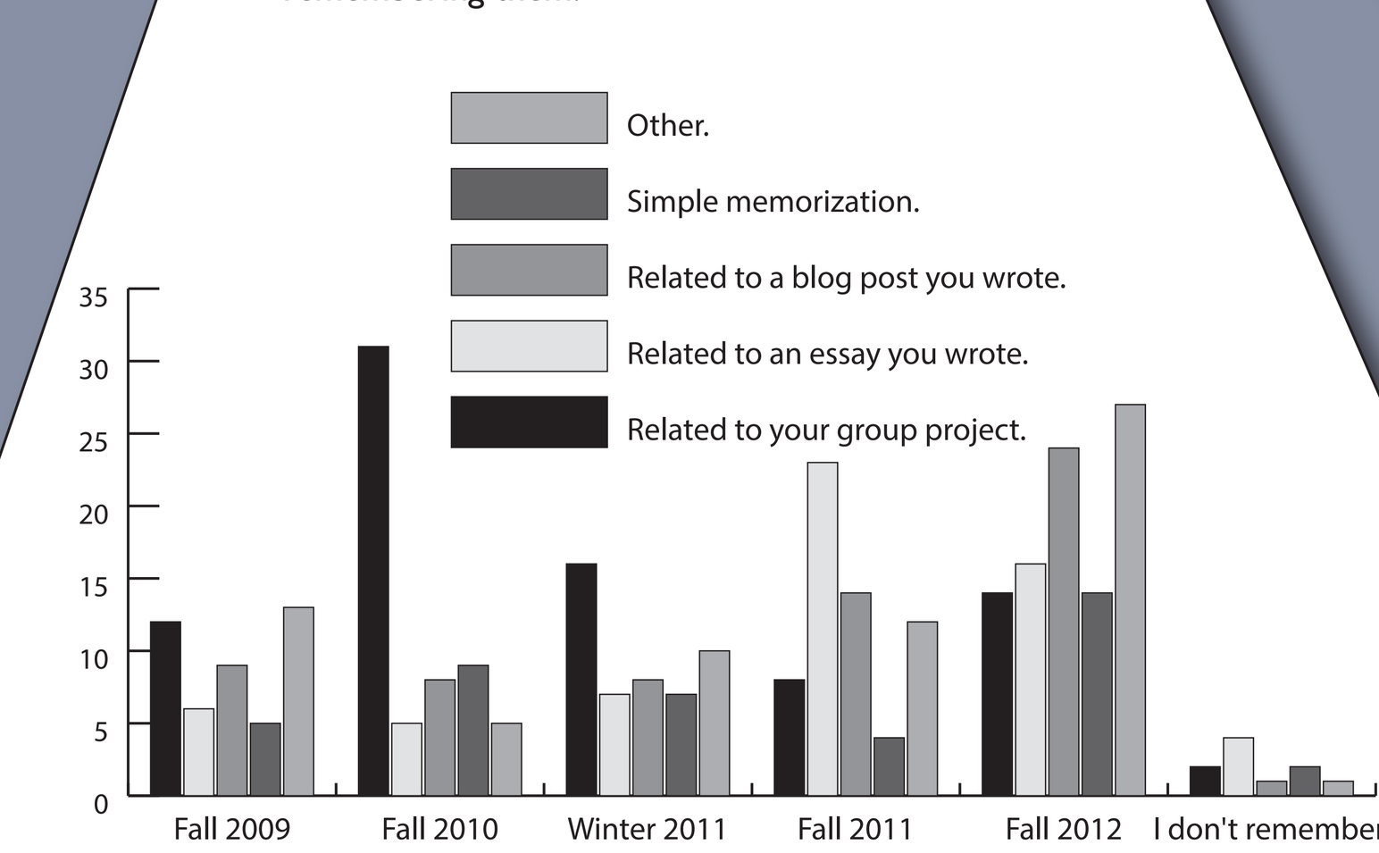
As the graph in the "Autonomy" section above shows, students also report, in significant numbers, being more motivated to work as a result of the course structure.

The results don't indicate *why* they feel more motivated, but that is, in a way, the whole point: a sense of motivation — wanting to do something — is evidence of motivation being more intrinsic. Students are good at distinguishing between what they have to do and what they want to do.

When asked about why they chose an optional task 59% said they did it because they wanted to put together a good product while 41% were motivated by "getting it done."

LEARNING

The question of whether students in POLSCI 101 learned more effectively than in the prior iterations is both reasonable and, it turns out, beside the point. Many survey respondents correctly remembered at least one central concept from the course. The graph below shows what the students credited for remembering them.



METACOGNITION

Because content mastery is not a central goal for POLSCI 101, far more important than the learning of ideas are the kinds of skills students learn in the course. This is because the skills are for longer term and will help them on their careers as students and even beyond.

The gamified structure of the course exists in part to encourage metacognition, that is, student reflection of theselves as learners, with different kinds of interests, initial skillsets, and learning styles.

Consider the following quotations from follow-up interviews:

"I learned a great deal in this class. Maybe not all about polisci, but I know that doesn't disappoint you. It's made me think about my life and the world around me differently, I mean that."

"...I learned more things because I couldn't just memorize facts to forget later; I had to make sure I understood concepts in order to write essays and blog posts. When I was taking notes in class, I didnt feel pressured to write down everything Professor LvM said because I feared it could be testable material. Instead, I was able to listen better and understand the concepts better."

SCALABILITY & TRANSFER

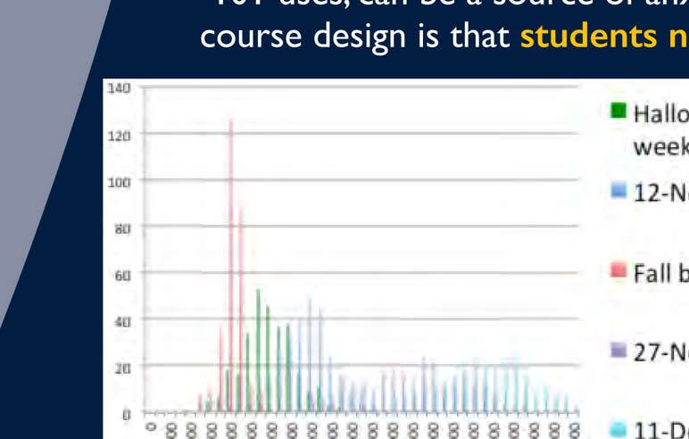
Does this approach work in other courses? We believe it can. Although the gamificaition of POLSCI 101 has overlapped with the increasing use of technology in the course — students can interact with the instructor using their laptops, tablets and smartphones; they can watch the live stream of the course from elsewhere and still participate — we have chosen not to highlight the technological dimensions. They are largely independent of the gamified approach. (For the exception, see the box below.)

As far as the scalability of the course goes, it currently works well with 300 students and five Graduate Student Instructors; the most important question is whether the gamified dimensions are *needed* in small courses. We believe they can help courses of any size. The most important limitations we have identified are the following:

- How much is the course about content or competence mastery? Which are the things that all students must be exposed to or experience?
- What assignments can be optional?
- What kinds of unconventional assignments might motivate or inspire the students?
- How are optional assignments comparable with one another, particularly in terms of assessment (what did the students learn?) and evaluation (how are the students scored?)?

FEEDBACK TO STUDENTS

Although our survey results don't reflect this, evidence from teaching evaluations and anecdotal feedback tell us that a non-standard grading scheme, which POLSCI 101 uses, can be a source of anxiety to students. The central principle for gamified course design is that **students need frequent feedback on how they are doing.**



This can be done with conventional learning management systems and off-the-shelf tools: the chart on the left is the Excel histogram LaVaque-Manty shared with POLSCI 101 students every two weeks during Fall 2012.

A better solution might be to adopt an LMS or grading tool particularly designed for a course with this kind of structure. POLSCI 101 now uses GradeCraft, a "gameful" learning management system developed by Professor Barry Fishman and Caitlin Holman at the University of Michigan. GradeCraft gives students rich information about their standing in the course and, most importantly, allows them to "predict" their grade by using a projection tool. One student comment on the tool:

"When you see a visual of the bar and how many points you have and what you can get, I think it motivated me to reach the highest score possible. Thus I try to find classes with a similar grading structure so I know every day my progress and grade in the class."

"Our own experience instructs us that the secret of Education lies in respecting the pupil. It is not for you to choose what he should know, what he shall do."

Ralph Waldo Emerson

BIOS & ACKNOWLEDGMENTS

Elise Ghattas graduated with a BA in Political Science and International Studies in 2014. She was a student in POLSCI 101 in Fall 2010, the fall of her freshman year. She has worked on the 101 research project since May 2013.

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Ben Peterson is a graduate student in the Department of Political Science. He has served as a GSI in POLSCI 101 since Fall 2010 and has been instrumental in developing and revising the gamified version of the course.

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For the 2013 syllabus of POLSCI 101, scan the QR code on the right.