

Patrick McGinty's AV-Centered English Seminar Curriculum

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Introduction

When I first heard about Patrick McGinty's 100-level English seminar at Slippery Rock University, it was a moment of head-slapping revelation. What Patrick had done went beyond introducing a general audience to the challenging topic of autonomous vehicles (no easy task on its own), actually encouraging students to connect this new mobility technology to broad range of issues, perspectives and disciplines and getting them thinking for themselves about its potential and pitfalls. Moreover, he did so in a discipline that few would ever think to connect with AVs yet which beautifully illustrates the broad potential of AVs as a pedagogical tool.

We are still in the earliest days of autonomous drive technology, and its most profound impacts on our lives, economy and society still lie ahead. There is no question about whether the technology will continue to mature, but there remain a great many questions about whether we will rise to the challenges it presents. Will we, as a society, create good laws and social norms around AVs? Will we ensure that their benefits are equitably distributed? Will we be able to anticipate the kinds of difficult-to-foresee second- and third-order consequences that accompany any new technology?

If so, it will be because educators like Patrick understood that technology is only as good or bad as we make it, and that deploying new technology in broadly beneficial ways starts with understanding it and how it will interact with our world. It starts, in other words, with education.

I hope this curriculum inspires you and changes how you think about the role AVs can play in education of all kinds. It certainly did for me.

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Overview / Course History

In order to increase participation in the dialogue around autonomous vehicles, PAVE has assembled the following document to help educators at the secondary or higher education level construct their own non-technical course (or course unit) centered on AVs. The curriculum is based largely on a seminar course taught at Slippery Rock University by Patrick McGinty, who, along with his students, sought to “create an evidence-based historical context for American innovation, assess regional news stories to evaluate the behavior of local AV companies in the Western PA community, and envision what AVs mean for the future of American life through both creative and professional presentations.”

While the ensuing assignments and documents outline the successes of this specific approach, the following pedagogical outline is ripe for modification, expansion, and revision. Perhaps a history teacher (or even a history-inclined educator) would focus heavily on the “historical context for American innovation” unit. A Communications, Media Studies, or Journalism course could focus on the news coverage of the AV sector and the ways in which new technical language is born, manipulated, and improved-upon. A Fine Arts course could ask students to draft “creative” work that anticipates new AV-laden realities, a Business course might lean more heavily on “professional presentations” to construct pitch decks or company profiles, on and on.

Whether these assignments inform the creation of a new course or fill gaps in pre-existing curriculum, the goal is the same: upon completion of the course or unit, students should feel invested in the AV discourse, not merely out of curiosity but instead as empowered thinkers ready to contribute valuable, necessary insights from within and across multiple disciplines.

Student Testimony about the original University Seminar course

Student Testimony: “As a Mechanical Engineering student, It was obvious to me how the development of driverless cars connected to my major. However, it was interesting how the development of these cars might affect majors as diverse as education, physical therapy, and economics. I left the class with a better understanding of the interdisciplinarity of not just this field but other fields that I originally thought were almost exclusively engineering focused.”

Student testimony: “I originally did not think I would be interested in my Driverless Cars seminar. The ONLY things I knew about cars going into this course is that they have 4 wheels and I learned to drive in a Honda Civic...”

“Having now successfully completed this seminar, I can honestly say that I have never learned more in a class than I have in Driverless Cars. Both the professor and curriculum did a fantastic job of allowing each student to explore the topic from endless angles, and incorporated all of our interests/majors to relate the material directly to us. For someone who knew nothing about regular cars, let alone autonomous vehicles prior to the course, I was interested in and felt comfortable participating in the discussion based class. The highlight of the course was taking our newfound knowledge as a class and constructing a letter to those in the Driverless Car industry—I feel our work was able to go beyond just the classroom.”

Student testimony: “Before taking this course I never had any interest in cars so coming into the course I was unaware that driverless cars were even a thing. Throughout the course I learned a lot about the pros and cons with driverless cars and I feel I am more well-rounded about this topic. My major is biology and I am able to connect it with my knowledge of driverless cars by seeing how they will supposedly have a positive impact on the environment and also how there will hopefully be a decrease with automated vehicular crashes.”

Student Testimony: “The course really helped broaden my understanding of interpreting different texts and how to relate a topic to myself. By connecting the topic of Driverless Cars to my future major, I was able to look at the technology as a tool instead of something that seems like a fantasy.”

Student testimony: “I learned a lot about the effects that technology has on us as a culture. I learned that having something as convenient as Driverless Cars is a very complicated issue. Driverless Cars also taught me a lot about topics from other majors in my class such as safety management, psychology, and even education. I am very thankful to have had the opportunity to take the Driverless Cars course that allowed me not only to learn about Driverless Cars, but to learn about looking at issues from many different perspectives in order to completely understand the topic.

Student Testimony: “As an Early Childhood and Special Education major, Professor McGinty allowed me to think about the ways AV’s could affect my future career. Overall, this class educated me on the positives and negatives AV’s could potentially have in the future. As a young adult, Professor McGinty gave my peers and I knowledge of our future and how we have the power to change the roads.”

Original Course Description

Stakeholders from nearly every sector agree: there needs to be significant intellectual and imaginative rigor applied to the field of autonomous vehicles (AVs, or driverless cars, though we’ll discuss whether these and other terms are interchangeable). There is debate about when (if?) these products will hit the consumer market. There’s debate about the degree to which AVs will improve the health and safety of Americans. How will the legal code need to be amended? Will the (supposed) environmental benefits of electric driverless cars outweigh the (potentially) devastating effects on an American work force that includes drivers of all sorts? What are the social consequences that no one is even talking about? In short: how ‘good’ are AVs? And who exactly are they ‘good’ for?

The University Seminar “Driverless Cars” will place students in the proverbial driver's seat of these important social conversations. Students will create an evidence-based historical context for American innovation, assess news stories/individuals/organizations to evaluate the behavior of AV companies, and envision what AVs mean for the future of American life through both creative and professional presentations.

Original Course Structure

Unit 1--Constructing a Historical Context for American Innovation

The course begins by first establishing a context for technological innovation. Students will 1) reflect on their attitudes toward different types of technology 2) choose a 20th century innovation--microwaves, the personal computer, or even more obscure and forgotten innovations--and present a brief evidence-based oral history of how each innovation's price, perception, and side effects shifted across time.

Unit 2--Placing Driverless Cars into Historical Context

With innovation-related warnings and panics having been freshly contextualized, students will read *No One at the Wheel: Driverless Cars and the Road of the Future* by Samuel I. Schwartz to develop Autonomous Vehicle (AV) vocabulary and also to reflect on how their major and/or personal interests fit into the many debates surround AV.

Unit 3--Creative Interpretation: Placing Characters into Driverless Cars

The sub-genre of speculative fiction has helped humanity imagine future ways of living and future applications of technology. More often, the genre has provided stern warnings re: the rapaciousness of innovation when it eschews ethical concerns. Equipped with an understanding of innovation 'response' trends and the social issues surrounding driverless cars specifically, students will draft and revise a short one-act play, screenplay, short story, or comic that abides by one constraint: an autonomous vehicle must be involved in the plot. Is it a thriller where an AV is hacked? Is it a courtroom drama where the legal implications of AV are playing out in real time? How might dating, long family road trips, and morning commutes be altered by driverless vehicles? Fiction itself is a vehicle for imagining future social landscapes, and the Creative Interpretation assignment will provide students with the opportunity to evaluate the emerging industry via the literary arts.

Unit 4--Stakeholder Symposium: Placing Ourselves into the AV Discussion

This assignment will be rolling throughout the term, with a presentation at the end of the term. Students will have the option to work in small groups or on their own, focusing on one of the following "perspectives:" (Legal, Environmental, Accessibility, Safety, Labor, Data, etc.; students can create their own perspective if they wish). The assignment will require students to inhabit a specific stakeholder's perspective i.e. a regional politician or activist, a roboticist or organization, so on.

What follows are the four main assignments from the original course. At the bottom are comments by the instructor as well as student feedback. Instructors seeking further conversation are welcome to reach out to Patrick McGinty at patrick.mcginty@sru.edu.

UNIT 1: CONSTRUCTING A HISTORICAL CONTEXT FOR AMERICAN INNOVATION

Do we get overly excited about new technologies? Or are we overly fearful? (Or properly hyped...or properly fearful...). In this assignment, groups of students will select a technology from the 20th/early 21st century then chart its 'hype cycle' via an Oral History, i.e. by assembling viewpoints from stakeholders and allowing them to tell the technology's 'story.' This presentation should:

- 1) **Take the form of a one- or two-page handout, OR the form of a brief PowerPoint presentation.** Under the title, the presentation should briefly define the technology, then proceed straight to the oral history format discussed in class. As far as presentation logistics go, group members will solicit participation from classmates, who will read each contribution.
- 2) **Be organized into three sections: Pre-Launch, Launch, and Post-Launch.** Each section should have at least four contributions (so, 12+ total). At least three sources must be consulted.
- 3) **Examine the technology's evolution in these areas: pricing, public reaction, side effects, stock valuation, regulation, and whatever else may be relevant.** Run 'good' internet searches and 'bad' ones (we'll discuss). Call or text someone in your life who may remember when the technology emerged, and ask if you can use their contributions in your project; quote them exactly. Ideally, the final form is less a definitive history of the technology and more of a collage of society's collective 'remembering' of it, both factually and experientially.
- 4) **Synthesize and analyze both your findings and your process.** At the end of the document, I would like a brief, jointly written paragraph explaining how your group found and incorporated each source (note: I do not want a Works Cited. I want you to write out your process for locating each source). At the end of your oral presentation, the group should synthesize the arc of the technology. What does it represent about our relationship to technology? As a case study, does it show that we are unduly optimistic? Unduly fearful? Something else? Your analysis should be rooted in the evidence you present, but don't be afraid to go wide-lens.

Instructor feedback: This unit rather obviously does not need to be done via an oral history project, nor as a group project. I do think it is crucial to establish historical context for AVs in some fashion, though. Whereas much of the writing from within and around the sector has been hyperbolic at times, historical context helps students understand that in many ways, AVs are quite similar to other technologies (and quite different, too). It's healthy, in my view, for students

(or anyone, really) to proceed into the AV discourse with a firm understanding of the unforeseen side effects--good and bad--of previous technologies.

A word about the oral history component. I would advocate for employing this approach within the historical context unit because it helps students meet one of the underlying goals of the course: to participate in civic dialogue about driverless cars. Usually, when students asked a grandparent or older neighbor about some 20th century innovation, the response was: "what's this for?" The student would then explain that the project was for their driverless car seminar, and suddenly, the interviewee was fascinated to hear more about how and why the student was taking a course on AVs. In some instances, the interviewees wanted to continue hearing from the student about the course across the semester. This ongoing conversation was an enormously satisfying development for me.

I failed in two key areas when it came to the oral history component, though: 1) I spent too little time on interview mechanics (i.e. avoiding leading questions) 2) I spent too little time on the historical context of oral histories themselves (i.e. oral histories should seek out underrepresented voices whose perspectives can help alter more commonly accepted historical narratives about an object or event). So, there's enormous benefits to having students open up innovation-centric dialogues via an oral history project, but there's also the risk of confirming pre-existing narratives rather than re-assessing them.

Student feedback: "We chose to research self-checkout machines as our piece of technology within the cycle of innovation. What we found most surprising were the studies and results related to how this specific piece of technology affected specific racial groups, by eliminating their jobs. You might never consider how a new gadget or machine affects certain groups of people or communities, but having made this discovery about the self-checkout machines, it made us wonder what specific communities driverless cars may affect, and how."

Student Feedback: "For the oral history project, my group did the Virtual Boy. Before starting the project, I already knew the product had been a flop, but I was unaware how badly it had flopped. Through researching my chosen innovation and listening to the presentations of others, I was able to realize how different the cycle of innovation can be from product to product. I was also surprised by how many failed innovations have become buried in our history."

Student feedback: "The oral history project taught us that technology can explode at first and then completely die out and that some start out slow and become super popular over time."

UNIT 2: PLACING DRIVERLESS CARS INTO HISTORIC CONTEXT

No One at the Wheel: Driverless Cars and the Road of the Future by Samuel I. Schwartz introduces a number of AV perspectives: health and safety, infrastructure, the environment, labor, so on. In this response paper, students will identify a perspective where they found themselves agreeing with Schwartz, an area where they took issue with his approach or argument, and how the book directly or indirectly roped in their major. This paper should:

- 1) **Be structured into three sections: Pro / Con / Major Perspective.** In the **Pro** section, ask yourself: where did you agree with Schwartz? Was there new information he presented that changed your perspective? Was there an argument he made that solidified your pre-existing hunch? How did he make this winning argument and why do you think it was so persuasive to you? In the **Con** section, ask yourself: which sections did you have a hard time getting on board with? Which arguments did he spend too little time on? Were there any groups you feel are important and worthy of consideration/discussion but that Schwartz ignored? The 'Con' section can be a specific refutation of an argument or a more general criticism of his overall approach and perspective.
- 2) **Really, truly grapple with how your major(s) might be altered by AV.** If you don't yet have a major, hypothesize how it might affect several of the majors you are weighing. Even if your major seems wildly unrelated to AV, challenge yourself to make connections across disciplines. No connection or ramification is too small. Many of the connections and ramifications are still evolving and undiscovered. It's our job to come up with them.
- 3) **Reference Schwartz specifically, not generally.** Don't merely state "I was really shocked whenever he talked about the vehicular death rate." Provide a specific line or statistic that stuck out to you, and explore why it shocked you. Examine your expectations and assumptions. Reference Schwartz's arguments/statistics/anecdotes as specifically as possible, quoting and referencing page numbers whenever possible
- 4) **Use the headers as starting points; feel free to dive in and explore within each header.** A really well done three-paragraph approach will (likely) earn a B grade (i.e. each header receives one paragraph). For an A, you'll need to provide multiple pieces of evidence in each section. Don't simply show that you agreed with Schwartz's argument or theory in one singular spot; show that you agreed (or disagreed) with his entire line of thinking that spans the book.

Instructor Feedback: Because there is so much AV writing that sprouts off into so many subtopics, I wanted to start from the most general place I could, i.e. not a book that was focused on one company, one era, one discipline, etc. It should be noted that this Schwartz text, published in 2018, may be quite outdated by the time a PAVE-supported course is taught.

Podcasts, scholarly journals, and even news articles were necessary supplemental materials to keep our conversations “current,” and these sources should be leaned upon regardless of whichever core text is chosen.

Also note that, in this response paper, I’m less interested in how the students feel about a certain argument and more interested in how they feel about how Schwartz *made* the argument. As an English instructor, I’m naturally more interested in audience and rhetoric, and so I wanted my students to pay particular attention to which modes of narration or argumentation were most effective for them in the AV discourse--personal narratives, statistics, historical antecedents, so on.

This emphasis on storytelling and argumentation would be a recurring theme in our course, i.e. focusing not merely on the ebay arguments, but on how to most effectively *construct and present* those arguments.

Student feedback: “The text helped me appreciate the complexity of the driverless car issue and how it is intertwined with so many different sectors or issues.

Student feedback: “At first, I did not like reading the Schwartz text; however, as it went on it got really interesting and provided me with a ton of information and facts which allowed me to understand the concept of AV’s much more clearly.”

Student feedback: Driverless Cars was an honors class I took my fall semester of my freshman year at Slippery Rock University. My schedule was pre-made for me, and I did not know what to expect from this course. Turns out, Driverless Cars with Professor McGinty has been my favorite class at SRU. Reading texts from Schwartz gave me a new perspective to AV’s and life in general.

UNIT 3: CREATIVE INTERPRETATION ASSIGNMENT

As we have discussed in class, fiction is capable of peering through and peeking over barriers created by time and space. It has helped humanity imagine future ways of living and future applications of technology. More often, the genre has provided stern warnings re: the rapaciousness of innovation when it eschews ethical concerns. In this project, you'll try it on for size, so to speak.

Your creative interpretation piece should:

- explore a genre—the short story, the one-act play, the screenplay, the graphic novel, or a genre of your choosing (with permission)—to create a story that involves a driverless vehicle. That's really the only rule: the story must involve an AV.
- be robust enough for some narrative action to occur. A short story should be 7+ double-spaced pages. A one-act play or screenplay should be 10+ double-spaced pages. A graphic novel or comic must be at least six panels.
- have as its cover page a one paragraph summary of the project, including: why you chose to work in this genre, what your influences are, how you went about incorporating feedback and revision into the piece. You should use this reflective paragraph as an opportunity to address and insights, frustrations, and breakthroughs you had working through the genre.

Instructor feedback: Some students will take this assignment and run in truly, wildly fantastic directions. But: many will need guidance, particularly if they are not familiar with literary conventions. I very briefly overviewed a screenplay, a short story, and a graphic novel so that students had rough templates to work from. Instructors might choose only one form. Conversely, they might ask for paintings, short movies--I would heartily encourage instructors to be creative with this creative assignment, which was the best assignment of the bunch at subtly unearthing the anxieties and hopes of students when it comes to AVs.

Resist the urge to be too prescriptive or hand-holdy in this assignment, at least when it comes to the students' nerves about operating within a specific artistic genre. Remember that a student's ability to hew closely to accepted literary or narrative conventions is likely not the point of the course. The goal is for them to envision the role of AVs in the very near (or very far) future. Reiterate this point often: storytelling (or really any artistic) conventions can be learned and mimicked, but new possibilities and scenarios have to be invented and dreamed up.

Student feedback: "Writing creatively about innovation, specifically autonomous vehicles, allowed me to explore both the pros and cons of implementing them into society. I chose to write about the several car accidents I'd been involved in during the first 18 years of my life, and

discovered that even if there had been no one driving the car that I was in, these accidents still may have happened due to infrastructure failures. Like anything, driverless cars are a gamble, but it's worth exploring the potential outcomes and seeing how AVs would fit into our own lives.

Student Testimony: University Seminar: Driverless Cars taught me to think outside the box on a concept that could be right around the corner. The creative story that we made up taught me that before launching any sort of project or idea to analyze and try to imagine every outcome, because you never know what could happen.

Student feedback: " I really enjoyed the creative writing in Unit 3. By creating a story, I was able to open a side of me that I did not know I had. Being creative allowed us to see everyone else's interpretations of what the future of AV's will become."

UNIT 4. STAKEHOLDER SYMPOSIUM: Placing Ourselves into the AV Discussion

I'll keep the preamble short because we've been hinting at this assignment all term. Students will have the option to work in small groups or on their own. You will choose an individual or organization then research and represent that perspective in our symposium project. You can serve as a regional politician, activist, or business owner. You can present as a roboticist, climate scientist, or urban planner. The person you choose needs to have something at 'stake' when it comes to the AV discourse. Our collective goal is to bring all of these disparate voices into the same room.

If you're struggling to select a perspective, think of an individual from your discipline/major who would want to have a 'say' in this discussion. Peruse the bibliography of Schwartz and the 'Show and Tweet' conversation on D2L. Don't skimp on brainstorming your perspective.

In this project, students need to develop a working bibliography of their chosen stakeholder. The end result is a handout or PowerPoint presentation in which students will:

- Conduct a **10+ minute presentation** that abides by the following arc 1) a brief biographical sketch that provides an overview of their persona's work to-date (publications, podcasts, job titles) 2) an analysis of the stakeholder's preferred 'rhetorical style,' as discussed in class 3) a claim in the form of: "The most pressing issue we need to discuss when it comes to the AV sector is _____," followed by 4) evidence that is presented in the stakeholder's preferred style (personal anecdotes, statistics, so forth).
- Annotate **6-10 sources authored by the stakeholder**. At least half of your sources need to take the form of a sustained inquiry (a paper/essay/op-ed, an interview, a podcast conversation, etc). Tweets and shorter contributions to the discourse can be annotated, but they should not comprise the bulk of your annotations. Each annotation should take the form of a paragraph that **includes at least three sentences of summary and at least three sentences of analysis** (see D2L for further commentary).
- **Respond to at least three of your peers' presentations** in the post-presentation discussion forum. Your response should originate from the perspective of your stakeholder. How would they rebut or support the presenters' claim? What evidence would they counter with? The more specific your rebuttal, the better. You will know in advance which topics will be on which days, and though you can prepare your remarks before class periods, **your responses should always be deeply engaged with what the presenters actually said.**

If a small group of no more than three wants to serve as the "moderators" for this four day event, please see me privately, and we will go over the pass/fail requirements for your particular assignment. Do note: moderating will be a significant undertaking and require you to become mini-experts on each presentation in advance.

Instructor Feedback: This assignment required significant brainstorming with students, i.e. helping them find AV stakeholders who fit their interests and disciplines. This project could purely be a written project, but all three sections found it particularly enlightening to play-act as their chosen personas in a symposium setting. The Honors section wrote a summative letter that was sent to the real stakeholders, and many stakeholders responded in truly large-hearted fashion, forming relationships with students that continue to this day (let's be real: there's a fair amount of vanity in the AV sector, and AV stakeholders were quite excited to hear that they had been 'studied'). Some students reached out to their stakeholders during the project, with mixed result.

One interesting side effect of this project was that some groups/students had a hard time pinning down their stakeholder's core beliefs. Some students felt as though they were doing a 'bad job' because they couldn't succinctly summarize their stakeholder's stances, and this led to some really fascinating email exchanges and one-on-one conversations that I then brought to the group at large: when is an individual ambivalence a sign of sophistication and when is it a sign of unsophistication (or even cowardice)? How do we tell when an individual is genuinely torn about a development in the AV world versus when they are scared of saying something that might anger their constituency, be it an employer, employees, voters, etc?

My advice would be: don't shy away from these and other difficult questions that arise from the stakeholder symposium project. The AV sector as an industry and workspace is in many ways barely in its adolescence, and many of the individuals students study are still trying to find exactly how to carve out their own space. Students are not simply studying individuals and issues from the AV sector in this unit; they're studying how to behave and advocate for one's ideals in any sector.

Student Feedback: Studying a voice in the Driverless Car discussion related to the goal of the course because it really helped me understand the interdisciplinarity of the issue. Some of the voices were from sectors I didn't expect to be part of the discussion.

Student feedback: As a parts runner for a local distribution company, I already had specific insights about the problems and potential of autonomous semi-trucks. Studying Steve Viscelli really helped to put that into perspective, both positive and negative.

Student feedback: For my symposium project I studied Iyad Rahwan and his feelings towards driverless cars. It was interesting to read and listen to someone else's opinion about this topic. He focused a lot on the social dilemma and trolley problem associated with driverless cars which are both important factors to know about when dealing with this topic. In general, this project also made me realize that there are so many people in the world studying and researching this developing innovation.

Student feedback: Although it was an odd choice picking a bike advocate, it helped us find information about safety that was important to bikers and pedestrians. It helped us see that driverless cars have a ways to go till they are safe to share the road with bikers and walkers.

