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Living Among Immigrants at the U.S.-Mexico Border: Community-Based Learning and the Benefits Evidenced Through Network Science

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Abstract: *This study examines immersive community learning during a student trip to the United States-Mexico border, with nine students documenting their experiences through journals and evaluations. Using innovative techniques from statistical network science, we analyzed commonalities and differences in students' experiences, quantitatively assessing sentiment variations and exploring their first-hand observations. Novel methods using cluster centrality and community detection were deployed to identify broad areas of observation and concern. Emotion fluctuations, recorded with the National Research Council (American English) dictionary, are placed on a firm numerical basis, and thematic currents are unearthed with the presence or absence of topical diversity. Students reported strong emotional engagement with their experiences, reflecting on challenged worldviews through phrases like "border dynamics," "strong stories" from immigrant narratives, and "emotional farewell." These findings demonstrate that community-based learning curricula, which extend beyond traditional classroom limits, can effectively address and overcome misinformation regarding border issues. The study spotlights the transformative potential of education focused on community engagement, empathy, and solidarity, providing a framework for future community-based educational projects and emphasizing their substantial benefits to student learning experience. Four pedagogical contributions and actionable insights to take from this research: (1) preparation and design, (2) emphasis on "communal living," (3) reflection, and (4) establishing trust.*

Keywords: Immigration, Community-based learning, Service-learning, Student experience

Introduction

The 2024 presidential election demonstrated a deep polarization surrounding the issue of immigration within American discourse, and simultaneously revealed the growing influence of misinformation on the topic. As a result, anti-immigrant sentiments have surged, with the proportion of adults viewing immigration as detrimental to the United States increasing by two-thirds since 2020 (Gallup 2024). In an era characterized by dubious information and "fake news" (Lazer et al. 2018), teaching politically sensitive subjects such as immigration poses

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formidable challenges. Educators employing traditional learning modalities have struggled to combat the entrenchment of anti-immigrant discourse. Data and research are often introduced to students too late, after misinformation about the U.S.-Mexico border has already been absorbed, internalized, and widely shared, thus necessitating intervention. Education on the borderlands stands at a critical juncture, crucial for driving collective action and ensuring justice. However, the process of educating students is hindered by the increasing tide of misinformation that obscures root causes and effective solutions. This research problem calls for adaptive and innovative pedagogical approaches that can dismantle biases and promote critical thinking about borderlands issues and immigration. Our research argues that community-based learning (CBL) is a vital intervention that can address this educational challenge.

By integrating learning that is based on first-hand accounts and direct conversations with immigrant communities, students engage with those who experience these realities. Living with immigrants facilitates meaningful shifts among students' world views, especially when it comes the issue of immigration. To evaluate the effectiveness and impact of CBL interventions, it is crucial to measure student transformations and learning outcomes from these experiences. Our findings demonstrate that experiential pedagogy transcends the misinformation that students experience in popular media. As such, this research provides a necessary roadmap for overcoming polarization and the saturation of misinformation when teaching momentous humanitarian issues. By analyzing the efficacy of this pedagogical approach, this study explores a novel analysis that could guide future CBL projects, emphasizing its substantial benefits to the learning experience.

The U.S.-Mexican border as a social issue

The U.S.-Mexico border is often misunderstood by the general public, making it a frequent and contentious issue in United States politics. Researchers often refer to this misunderstanding as the "politics of fear" (Correa-Cabrera et al. 2014: 35; Correa-Cabrera and Garrett 2014; Heyman 2013). This concept is characterized by an exaggerated emphasis on allegedly higher crime rates, disease spread, and reliance on public tax dollars, which are among several inaccuracies portrayed in popular media (Fleuriet 2021; Van Hook and Bean 2009). Conversely, Mexicans and other immigrants have been the victims of increased violence the at the U.S.-Mexico border (in Mexico and the U.S.), due to U.S. policies, particularly since 2014 (Heyman 2021) and it has only worsened since President Trump took office (Garrett and Sementelli 2023). Mexican immigrants also have lower welfare dependency than native born populations and any other immigrant group (Van Hook and Bean 2009).

Consequently, relying on popular media for information can hinder understanding unless individuals can experience the border firsthand. Few people who neither live near the U.S.-Mexico border nor travel there frequently have the opportunity to directly witness experiences at the border. Those residing in border areas often have different views about crime than those portrayed in popular media (Castañeda and Chiappetta 2020). As a result, many people are dependent on journalists and commentators, who may offer filtered or biased perspectives on the issue (Afrin, Harun, Prybutok, and Prybutok 2022; Dell'Agnese, 2013; Fieros and Piñuelas 2021).

Sentiments Towards Immigration

According to Gallup polls, approximately 55% of the U.S. population believes that overall immigration should be reduced with 53% supporting expansion of the U.S.-Mexico border wall (Gallup 2024). These sentiments persist despite the significant economic cost of expanding the wall, its impact on environmental issues (Gallup 2024), and that the U.S. Congressional Budget Office (2024) projects immigrants to add over seven trillion to the U.S. economy over the next ten years.

College students' own sentiments towards immigration are mediated by several factors, including, but not restricted to, political affiliation, gender, race, ethnicity, parents' educational level, and location (Fussell 2014; Sibley, Brabeck, and Sladkova 2017; Huo et al. 2018; Schildkraut and Marotta 2018; Creighton et al. 2023). As popular debates on immigration become increasingly polarized among mass media outlets, researchers have been eager to identify predictors for radicalized attitudes (Tracey and Baaki 2022). Yet, they have produced conflicting findings when investigating the attitudes of different demographic groups (Tracey and Baaki 2022). For curriculum that explores the borderlands, migration, and human rights, such predictors may invite generalized insight into the political climate of a given institution. However, this information does not provide meaningful guidance for educators who would like to engage in impactful curriculum on the borderlands, regardless of student background, especially for educators who are seeking to inspire "empathy for action" and humanitarian response (Sladkova, Kim and Cook 2021).

Beyond demographic predictors, Sládková, Kim, and Cook (2021) identified the ways in which perceived threats of immigration—namely, economic, cultural, and security-related—impacted the degree to which one holds anti-immigrant sentiments and one's vulnerability to misinformation about the border (Demata 2021). This effect has been further intensified by conservative politicians and pundits' use of threat-based rhetoric to drive voter engagement (Reyna et al. 2013). For college curriculum, overcoming such bias and subjective perceptions is central to students' ability to shift or expand their understanding of the borderlands.

Acknowledging misinformation creates a precarious navigation for college educators. The profound use of stereotypes to depict the U.S.-Mexico border in political discourse and the wider mediascape, especially those associating immigrants with increased criminality, has promoted anti-immigrant bias and enhanced support for restrictive, isolationist policies (Jimenez, Arndt, and Landau 2021). It has also increased support for border militarization (Nasuto, Rowe, and Lee 2024). Paired with the speed at which anti-immigrant sentiments are spread through social media, students are entering college classrooms with greater exposure to misinformation, polarized stances, and threat-based rhetoric (Wright et al. 2020).

Arguably, this is both the most critical and challenging moment for college educators to explore the borderlands, immigration, and humanitarian reform. Yet, traditional information campaigns on either side of the political aisle *have not* been effective strategies for changing anti-immigrant sentiments fueled by media stereotypes, increasing the difficulty for educators. Grigorieff et al. (2020) found that individuals could briefly overcome stereotypical thinking when presented with a fact-based campaign about immigrants and the border. However, this

shift was temporary, leading to a regression to their previously held bias (Grigorieff 2020). Even more troubling, it did not impact participants' support of restrictive policies in the long-term (Grigorieff 2020). Given the ephemeral impact of information campaigns, traditional learning modalities may not be enough to overcome deeply held biases about immigrant communities, especially given the ease with which students can return to social media echo chambers and misinformation (de Saint Laurent, Glaveanu, and Chaudet 2020).

However, there is evidence of effective teaching strategies via the use of CBL, service-learning, and teaching through immersive learning. For example, Lohr et al. (2022) studied service-learning in the context of public health equity, utilizing the journals from graduate students from over nine years. Their graduate students reported advancement in their dialogue regarding issues of health equity at the U.S.-Mexico Border. King (2004) analyzed a student field experience with three undergraduate students and one graduate student to emphasize the process of "Collaboration, Critical Reflection, and Defamiliarization" (p.123) saying,

When service-learning affords students opportunities to cross social, economic, and cultural borders, and to form caring relationships across those borders, students are provided access to the cognitive and affective resources through which critical reflection becomes possible (p.135).

Austin (2010) emphasizes the building of key partnerships between schools and agencies at the U.S.-Mexico border. They emphasize student involvement in community-based activities, partnering to link research with community needs in many ways. Studies also show community learning and service-learning programs have a long history of successful implementation in Europe (Bodorkés and Pataki, 2009) and Latin America (Ander-Egg 1967).

Such curricula may be effective for students who are already receptive to this information or have personal experience with the subject. However, these courses may struggle to inspire those students already influenced by false narratives about the Southwest borderlands of the U.S. In this political climate, educators must adapt to provide opportunities for students to not only gain fact-based insights, but to develop the empathy necessary for humanitarian responses to the U.S.-Mexico border. Additionally, educators in this area are faced with the additional challenge of needing to deconstruct any misrepresentations of life at the border.

Community-Based Learning

Community-Based Learning (CBL) refers to curriculum that engages communities outside of the classroom to enhance students' academic outcomes through experiential learning (Snow Andrade 2021). Beyond traditional modes of learning, CBL provides transformative opportunities that necessitate leaving the campus, physically or virtually, to engage communities directly tied to course subjects (Wisniewski 2024). Students engage in interactive, relational learning through CBL that elevates their perspectives and better informs them on the needs of those impacted by the social issues (Wilken et al. 2024).

CBL has been utilized in a variety of settings. Medical schools have engaged in CBL through partnerships with rural communities, outside traditional hospital settings, to enhance student understanding of health barriers and inequity (Fathima et al. 2021). Business curriculum has utilized CBL to provide students with hands-on skill development that simultaneously meets the needs of small business owners (Snow Andrade 2021). Modern language educators have implemented language exchange programs so that students and

community partners can mutually grow in linguistic proficiency (Resinger and Clifford 2022). Across these varied subjects, students have deepened mastery of the course material, while also expanding their understanding of the communities and socio-political context to which that learning is pertinent (Schneider 2022).

The CBL model allows for curriculum to be compassionately contextualized through real connections to people and place (Collins 2019). It is for this reason that the CBL model is of particular interest to those educating on politically charged topics, such as immigration and the U.S.-Mexico border. Traditional lesson plans may fail to overcome students' preconceived notions about migration, border militarization, and more.

Additionally, CBL has been shown to not only strengthen comprehension of course content, but also to meaningfully increase students' empathy. By empathy, we refer to both cognitive and emotional empathy as both have been associated with promoting prosocial learning (Davis et al. 2024). Cognitive empathy refers to the accuracy with which individuals can identify others' emotions while emotional empathy refers to the ability to compassionately connect with the feelings and experiences of others (Han and Yoo 2024). There has been an increase of college educators attempting to enhance empathy in their curriculum, considering how to both inform students about social issues, and encourage long-term investment that might drive civic responsibility and action (Gerdes et al. 2011).

CBL has emerged as a high-impact practice for encouraging students' empathetic engagement with course curriculum (Gordon et al. 2022). CBL models can promote the breakdown of stereotypes by providing proximity to different communities. Gardner and Emory (2018) studied nursing students who participated in community-based practica specializing in services for those experiencing homelessness. Nursing students in this program abandoned previous stereotypes of this community and were more likely to engage in advocacy for this population after graduation (Gardner and Emory 2018). Because of the potential for both dismantling stereotypes and promoting civic action, CBL has a strong potential to be a powerful intervention for effectively teaching about the borderlands. This pedagogy may be crucial in overcoming the barriers that misinformation and threat-based rhetoric have created in modern classrooms.

Context

Students from a university in the Midwest participated in a "pre-field experience" course of approximately twenty-four classroom hours. For context, this university is a small liberal arts institution with less than 2000 students enrolled. It is a predominantly white institution (PWI) with over 73.8% white students, just over 8.5% Black students, under 4% Hispanic or Latino students, and just under 1% Asian students (Midwestern University 2024). Sadly, PWIs are common among campuses across the United States with national trends reflecting abrupt declines in racial minority groups within the previous year (Korn 2024). Additionally, Korn (2024) says:

The share of Black students entering Amherst College fell to 3%, from 11% last school year. At the University of North Carolina at Chapel Hill, where students could identify themselves racially in more than one category, the percentage dropped to 7.8% from 10.5%. And at Brown University, the share of first-year domestic students who are Black fell to 9%, from 15%. (p. 1)

Given the status of the campus in this study as a PWI and the geographic location, students are less likely to have personally interacted with issues regarding immigration and the U.S.-Mexico border than a campus closer to the border region. If they have exposure to border related issues, it is most likely through common political discourse and media outlets. This disconnect is made evident by the fact that 63% of students claim the student body as "very diverse" in race, ethnicity, and cultural background, despite nearly 8 in 10 students identifying as white (Niche 2024). During the in-class component, emphasis is placed on globalization processes and global cultural shifts, such as those focused on by George Ritzer (Cukalevska and Dragović 2018; Ritzer 2003; 2021) and Zygmunt Bauman's (1998; 2013) application to immigration issues. The material is supplemented through the artwork of Frida Kahlo and the anthropological work of Guillermo Batalla (2020). Classwork incorporated an overview of western hemispheric history, including readings on migratory experiences, the legal dimensions of Title 42, which was recently rescinded (Blake and Hesson 2023), and particularly the history of the Mexican-U.S. borderland region of Cd. Juarez and El Paso, Texas.

Students who participated in the field experience in the past often self-select to lead the field experience for those who are new. During the initial in-class experience these veterans of the program lead in-class community building activities, which prepared the group for their immersion experience at the U.S.-Mexico border. However, *only* first-time students were sampled for our study.

During spring break, the group travels by van from the Midwest to the borderlands. Traveling across the country for roughly twenty-four hours is a time to further develop the needed group chemistry for the upcoming immersion. What is distinctive about this program is that students live in community with those in migration. They live with, learn from, and serve those who are staying at the shelter, which provides hospitality for those in migration. The immersion is an activity packed program, which includes meetings with Federal agencies, immigrant advocacy groups, worker's cooperatives, social justice activists, and some limited service projects. For example, students helped build a memorial garden.

An important dimension of the programming is the "inter-cambio" (a Spanish phrase referring to opportunities for informal dialogue with guests) and opportunities to hear guest narratives through presentations. Each day, students interact with guests of the shelter by greeting them in the mornings, preparing meals, cleaning the shelter during down time and after meals, childcare activities, such as playing soccer or volleyball in the courtyard. Often linguistic barriers are a challenge for the community, so nonverbal communication is vital. For example, these students often choose to humorously entertain children in ways that resemble miming, which often also makes the parents laugh or acting to confirm the requests of shelter guests by gesturing their hand to mouth if a utensil is needed from the kitchen. Overcoming these linguistic barriers underscores a common humanity and the communal ethos, which can be transformative. In the context of the community, other than the volunteers who run the shelter, everyone is considered "a guest" of the shelter, including students and immigrants. The entire program for students is framed by daily periods of reflection in individual and group settings and *journaling*.

Data and Analysis

The university in this study regularly conducts an annual "border studies" program during Spring Break, hosting 8-12 students to El Paso, TX. During the 2024 field experience, students were offered the opportunity to participate in a submission of their journals for analysis and to complete an evaluation questionnaire (Please see Appendix A) at the conclusion of the field experience. Only students who participated for the first time were included in this study. To aid in recruiting participants, students were informed that they could duplicate their journals and redact any content they deemed too personal before submitting them to the facilitator. The facilitator believed this was the optimal method to ensure that the information remained authentic, while prioritizing what students felt comfortable sharing. Participants were also told that their participation could inform future field experiences and to be submitted for publication as a manuscript in a peer-reviewed journal.

Students require opportunities to uncover information that holds significance for them in manners that validate their personal life experiences (Barbezat and Bush 2013). Journaling can encourage students to engage with topics that may be politically sensitive as they contend with their own perspectives. The cognitive dissonance involved can be essential in the educational process, assisting students in experiencing a "pedagogy of discomfort" to deconstruct negative emotions while in uncomfortable situations (Barbezat and Bush 2013; Prebel 2016).

Network formation, quantitative tools, and observations

To summarize the students' essays, we convert them into networks connecting words and deploy techniques from mathematical graph theory to glean meaningful and actionable insights. These insights include understanding what the key talking points are, do they congregate around common themes, how varied are the issues students think about, the subtleties of the emotion that these lines convey. The first step concerns normalizing the text. Words are transformed into their generating lemmas to lower redundancy, all the while preserving their morphological root. For instance, a word like "studies" (present in the first sentence that Nyall wrote) or "Studies" (with an uppercase "S") is converted to "study." The next step involves removing stop words. Conjunctions or other waste words that do not carry useful thematic content such as "a," "the," "an," etc. are removed. For instance, the first sentence that Nyall wrote, *"I believe this is a very good grind for any border studies field experience"* is converted, through these processes, to {believe very good grind border study field experience}. These keywords will be used to construct a graph whose "edges" would join neighboring words and reveal how strongly or how automatically one word follows another (Brandes 2001).

Next, a network connecting these words is constructed with the edge weights (how heavy the edge colorings are) dictated by their proximities: if two keywords are adjacent, the edge joining them has a weight of 3, if they are separated by one word, then 2, and so on. For example, in Figure 1 below that documents the network formed out of Nyall's essay, we see heavy edges connecting "*border"* and "*study"* or "*study"* and "*field experience"* but a fainter edge joining "*good"* and "*border"* (please see Nyall's ordered keyword list shown above). One may argue these networks are similar to word clouds one is used to seeing in certain ways. Common keywords, that is, keywords representing talking points that are difficult to avoid (that is, which crop up often as vital links between two other words and are *popular* in this

way) get magnified, the volume of magnification in proportion to the number of immediate edges attached to them. However, these networks are different from standard word clouds in other ways. Visually, through coding up the distance between key concepts and revealing them through the size of edges, they showcase the thematic deviation between two or more topics, which a typical word cloud is unable to do. For instance, in Nyall's case (Figure 1), the wide gap between *"race"* in light green at the top and *"change"* in deeper green at the bottom, is designed to convey how these two concepts are not being discussed *in quick succession*. More subtly, this way of graphing opens up the possibility of going beyond merely pointing out which keywords control the hub of discourse flow. While the intuition has been provided above, these hubs are formed through calculating the betweenness centrality for each node (Brandes 2001; Freeman 1977), a measure that sees how often a node has to be crossed to make efficient journeys (that is, through shortest paths) from one side of the network to the other side. The more often it has to be crossed, the more its cruciality grows, the more it gets magnified on the graph. For instance, for Nyall, such vital themes seem to be *"people," "love"* or *"country."* Details are shown in Table 1, with the top ten themes out of the students' essays.

Table 1: Key themes that emerge out of students' essays

Nyall	Betweenness Centrality	Blythe	Betweenness Centrality	Lyle	Betweenness Centrality	Seren	Betweenness Centrality
love	0.176487	people	0.242092	people	0.324563	made	0.164754
people	0.127666	back	0.116342	border	0.27986	god	0.150843
country	0.105976	enjoy	0.112695	talk	0.246481	emotional	0.127654
life	0.099186	super	0.093749	good	0.1124	thing	0.114344
trip	0.09672	wall	0.088889	feel	0.087657	border	0.100905
wall	0.092595	reflection	0.083778	connection	0.074166	realize	0.076778
make	0.092114	good	0.071666	wall	0.068936	life	0.072593
day	0.08538	day	0.06564	day	0.063479	people	0.060499
border	0.066706	feel	0.062459	made	0.063317	important	0.048933
group	0.065878	fun	0.056338	night	0.057313	lot	0.044591

Rhea	Betweenness Centrality	Orin	Betweenness Centrality	Keaton	Betweenness Centrality	Darian	Betweenness Centrality
made	0.179427	fun	0.260982	people	0.419839	people	0.28848
thing	0.108559	great	0.142283	border	0.365367	feel	0.21131
life	0.108412	time	0.125909	migrant	0.192944	border	0.132708
border	0.100355	felt	0.125659	home	0.137455	thing	0.126376
love	0.093857	miss	0.119846	trip	0.124154	migrant	0.080272
day	0.076487	today	0.109447	back	0.072783	bring	0.077136
family	0.074205	back	0.092777	make	0.065104	experience	0.075813
work	0.05828	talk	0.084591	money	0.053687	make	0.063728
experience	0.052634	social	0.079245	casa	0.047238	story	0.061748

thought	0.050386	hard	0.0654	house	0.046422	hear	0.054591

As described, these words are vital to the circulation of the thought contained. They function as meaning junctions within the essay, anchoring the overall discourse to a few central themes. We note commonalities. How, for instance, for most students, observations regarding *"people"* or the *"border"* received topmost priority. Still, there are vital differences. The range of centrality variation is quite different among the students. For instance, for both Nyall and Keaton, while *"people"* was crucial (within the top two themes), Keaton's (with the centrality score of 0.42) exerted a much stronger impact on the network than the Nyall's, with a score of 0.13. In other words, Keaton finds it hard to avoid talking about *"people"* while relating any two other ideas, substantially harder than Nyall. While this may be a product of someone's writing style, vocabulary or diction, deeper and truer sensitivities (even when such other factors are controlled) cannot be ruled out. While *"people"* or *"border"* are concrete objects, with some students, less tangible constructs such as *"reflection"* or *"fun"* govern the prose.

Table 2: Key themes that emerge out of answers to pointed questions

Q1	Betweenness Centrality	Q2	Betweenness Centrality	Q3	Betweenness Centrality	Q4	Betweenness Centrality
meaningful	0.433294	challenging	0.343993	border	0.451995	border	0.32459
experience	0.327304	interaction	0.258539	people	0.271363	feel	0.241327
day	0.16931	language	0.248414	wall	0.267391	change	0.239183
live	0.126202	goodbye	0.210108	migrant	0.216145	made	0.227103
story	0.115907	people	0.188624	myth	0.16628	life	0.160926
made	0.113418	learned	0.176423	immigrant	0.162872	people	0.149939
wanted	0.09444	understand	0.135023	city	0.148523	experience	0.124972
shared	0.089878	house	0.118445	criminal	0.140085	show	0.098467
people	0.088696	communicate	0.118292	idea	0.132909	humility	0.067665
kid	0.087039	happy	0.107979	evil	0.064516	make	0.065027

Q5	Betweenness Centrality	Q6	Betweenness Centrality	Q7	Betweenness Centrality	Q10	Betweenness Centrality
migrant	0.321892	time	0.388098	felt	0.349466	border	0.398226
wall	0.273216	felt	0.321857	trip	0.308579	class	0.2813
experience	0.204538	experience	0.224318	skip	0.303882	presentation	0.263689
sand	0.19643	reflection	0.1611	class	0.233818	school	0.247126
life	0.191789	day	0.137922	enjoy	0.20246	felt	0.154004
made	0.174794	nice	0.122754	change	0.159562	service	0.137152
understand	0.16353	thing	0.111613	group	0.14367	thing	0.119697
lot	0.140028	days	0.110027	experience	0.132854	group	0.086207
perspective	0.119218	slow	0.10264	learn	0.120538	court	0.052764
life	0.102469	fast	0.084311	presentation	0.085501	low	0.048558

Q11	Betweenness Centrality	Q12	Betweenness Centrality	Q13	Betweenness Centrality
day	0.325089	reflection	0.737725	people	0.40654
reflection	0.286155	important	0.208248	presentation	0.333309
talk	0.209332	time	0.100101	share	0.207443
journaling	0.200463	student	0.096377	talk	0.149045
write	0.171671	beneficial	0.086056	trip	0.144711
journal	0.107394	issue	0.083254	time	0.141778
promote	0.091237	reflective	0.055783	group	0.129577
time	0.0835	component	0.055331	photo	0.112487
start	0.07038	thought	0.047961	return	0.10019
beneficial	0.065524	peer	0.038961	experience	0.067847

In a similar spirit, Table 2 shows the substantial themes that surface when probed on the specific issues shown in Appendix A. While some of these may be expected by those who interact with these student groups regularly, such as how *"language"* barriers or saying *"goodbye"* seemed to be the most challenging (question 2), the quantitative analysis, in addition to confirming those hunches, bring out nuances that would have gone, otherwise, unnoticed. How, for instance, *"language"* barriers are nearly as challenging (question 2) as the *"wall"* is when it comes to myths or images about the border (question 3), both having a similar centrality value of around 0.25. Some students also felt that the pace of the field experience was "fast" while others thought was "slow," which could point to the true pace of the immersion as somewhere in between.

Table 3: Global summaries from text networks out of students' essays

Student	Modularity	Sentiment (+,-,0)	Influence	Percentage
Nyall	0.48	57,36,7	26,16,13,13,11,10,8,3	14,14,14,14,21,14,7
Blythe	0.5	64,21,14	21,17,15,15,11,8,7,5	14,29,21,14,7,7,.,7
Lyle	0.49	36,50,14	24,20,20,7,7,7,5,4,2,2,2,1	36,14,21,.,7,7,7,.,.,.,7,.
Seren	0.43	71,24,6	27,22,15,12,7,6,5,4,2	29,18,12,12,6,6,12,6,.
Rhea	0.37	72,22,6	21,20,19,18,7,7,4,2	17,28,6,28,11,6,6,.
Orin	0.51	50,38,13	23,15,12,12,10,8,8,5,5,3	13,.,.,25,.,.,13,13,38,.
Keaton	0.51	46,38,15	31,22,11,10,7,5,4,4,3,2,2	31,23,8,8,.,.,8,.,8.,15
Darian	0.36	41,48,14	28,22,16,11,10,6,4,3	27,9,23,5,9,9,9,5

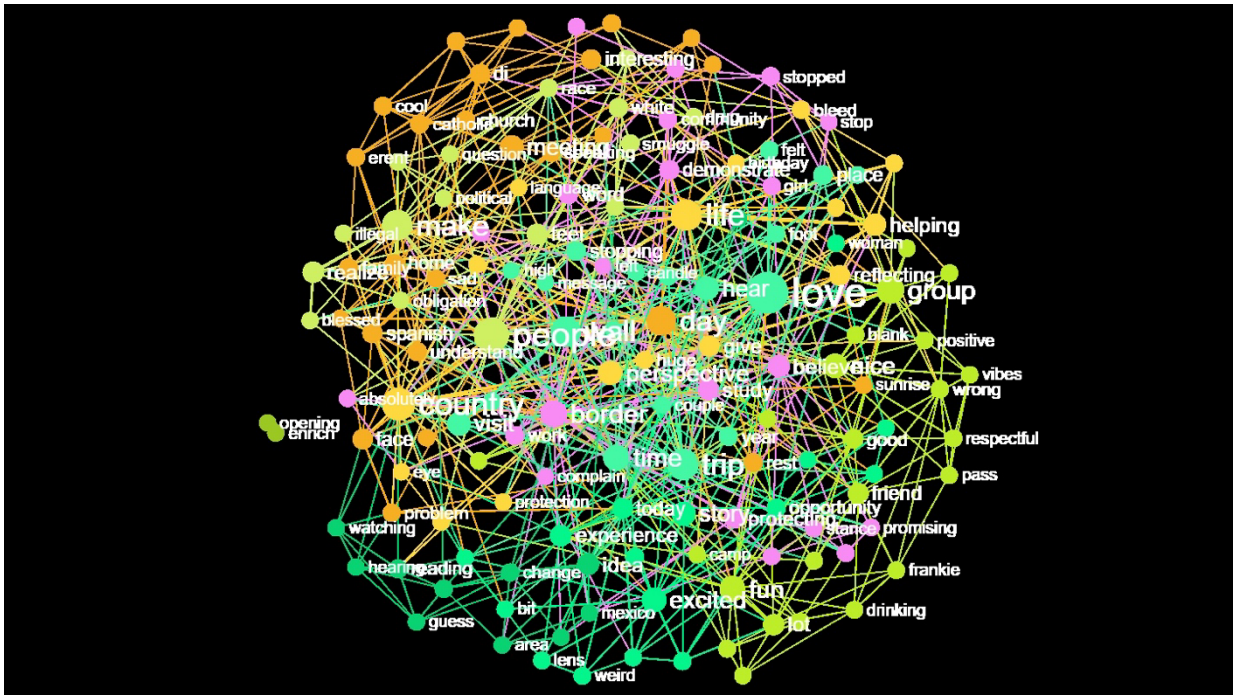

Fig 1: A typical text network representation (Nyall)

In addition to pointing out these hubs, one can locate certain basins around these hubs, certain other keywords that revolve around these main themes. These basins are identified through a community detection algorithm using modularity (Freeman 1977; Brandes 2001). Modularity is a scaled measure that describes the gap between the rate or pattern of observed edge formation and those expected if the links were developed purely at random. Larger values, close to 1, indicate the gap has widened substantially and they point out groups of words that are more connected among themselves than with other parts of the network. Collectively, the words contributing to a basin form a topical cluster. For easy viewing, these groups are colored differently and the Force-Atlas algorithm (Freeman 1977) is deployed to widen, while reporting, the gap between topical clusters (Fig 1). While there are a few ways outlined in the literature to represent a static network, for this case, we choose the Force-Atlas algorithm for the visual nicety it delivers. In this representation, the nodes (i.e., the words) belonging to different clusters repel each other like similarly charged particles, while edges try to attract the nodes joined by them. The resulting graphic makes for the clearest grasping of the relative dissonance (i.e., separation) among clusters or main themes.

Finally, based on how obvious the communities are, that is, how one-sided the modularity metric is, we detect the presence or absence of bias in the following way:

Low modularity (less than 0.2) suggests the absence of detectable communities, indicating influential words hover around one chief theme and that the discussion is predominantly biased or one-sided.

Medium modularity (between 0.2 to 0.5) indicates communities are present but are hard to detect. Influential words hover around a few themes. Other themes are weakly represented.

Diversified modularity (more than 0.5) indicates a marked community structure. Influential words are distributed among many well-defined communities. The essay has several topics, each with a high number of nodes, and the topics are connected.

The modularity scores for the eight students are collected in Table 3. We note there are none who had extremely small scores, reflecting narrow or one-sided or singular thoughts. The variation among these values is small. The field experience has, therefore, made each aware of, and more vitally, as reflected in their written-out thoughts, made each retain *many* aspects of people's plight, simultaneously. Future field experiences may be compared against the current one, at least at a large, overall, collective level, through these modularity values with larger values suggesting successful exposure to several facets of life at the border.

Table 4: Topical communities from students' essays

Nyall				**Blythe**				
Influence	**Total Nodes**	**Percentage of Entries**	**Category**	**Influence**	**Total Nodes**	**Percentage of Entries**	**Category**	
0.26	19	0.14	1. Travel Memories	0.21	23	0.14	1. Travel Experience	
0.16	16	0.14	2. Giving Back	0.17	17	0.29	2. Emotional Music	
0.13	16	0.14	3. Social Issues	0.15	23	0.21	3. Packing Tips	
0.13	26	0.14	4. Cultural Exchange	0.15	21	0.14	4. Emotional Support	
0.11	23	0.21	5. Romantic perspectives of borderlands	0.11	22	0.07	5. Cultural Exchange	
0.1	21	0.14	6. Rural Living	0.08	18	0.07	6. Different Cultures	
0.08	16	0.07	7. Illegal Activities	0.07	13	undefined%	7. Efficient Packing	
0.03	11	undefined%	8. Language Barriers	0.05	13	0.07	8. Self-Reflection	
0	2	undefined%	9. Friendship Dynamics					

Lyle				**Seren**				
Influence	**Total Nodes**	**Percentage of Entries**	**Category**	**Influence**	**Total Nodes**	**Percentage of Entries**	**Category**	
0.24	22	0.36	1. Humanity Stories	0.27	24	0.29	1. Emotional Connection	
0.2	26	0.14	2. Summer	0.22	34	0.18	2. Faith Journey	
0.2	20	0.21	3. Border Security	0.15	24	0.12	3. Border Wall	
0.07	12	undefined%	4. Night Activities	0.12	19	0.12	4. Life Change	
0.07	15	0.07	5. People's Lives	0.07	13	0.06	5. Community Experience	
0.07	13	0.07	6. Memories	0.06	6	0.06	6. Spiritual Journey	
0.05	13	0.07	7. Border Violence	0.05	16	0.12	7. Border Crisis	
0.04	9	undefined%	8. Night Struggles	0.04	9	0.06	8. Society's Expectations	
0.02	5	undefined%	9. Meaningful Connections	0.02	5	undefined%	9. Self-Reflection	
0.02	10	undefined%	10. Serving Community					
0.02	3	0.07	11. World Issues					
0.01	2	undefined%	12. New Beginnings					

Rhea				**Orin**				
Influence	**Total Nodes**	**Percentage of Entries**	**Category**	**Influence**	**Total Nodes**	**Percentage of Entries**	**Category**	
0.21	22	0.17	1. Daily Struggle	0.23	25	0.13	1. Fun trip	
0.2	24	0.28	2. Life Changes	0.15	13	undefined%	2. Social Adventure	
0.19	17	0.06	3. Emotional Impact	0.12	23	undefined%	3. Border Calm	
0.18	29	0.28	4. Border Crisis	0.12	22	0.25	4. Group Bonding	
0.07	17	0.11	5. Emotional Journey	0.1	11	undefined%	5. Fun Island	
0.07	22	0.06	6. Personal Growth	0.08	9	undefined%	6. Pleasant Surprise	
0.04	8	0.06	7. Sense of Home	0.08	12	0.13	7. Frantic Scene	
0.02	7	undefined%	8. Immigration Struggle	0.05	13	0.13	8. Open Conversation	
0	4	undefined%	9. Inner Reflection	0.05	13	0.38	9. Marathon	
				0.03	9	undefined%	10. Social Annoyance	

Keaton				**Darian**				
Influence	**Total Nodes**	**Percentage of Entries**	**Category**	**Influence**	**Total Nodes**	**Percentage of Entries**	**Category**	
0.31	23	0.31	1. Border Security	0.28	26	0.27	1. Migration Struggle	
0.22	16	0.23	2. Family Safety	0.22	14	0.09	2. Tragicomedy	
0.11	19	0.08	3. Travel Essentials	0.16	19	0.23	3. Personal Trauma	
0.1	11	0.08	4. Home Comfort	0.11	18	0.05	4. Border Control	
0.07	19	undefined%	5. Migrant Issues	0.1	18	0.09	5. Migrant Struggle	
0.05	10	undefined%	6. Gender Roles	0.06	18	0.09	6. Emotional Turmoil	
0.04	17	0.08	7. Adventure Packing	0.04	20	0.09	7. Personal Struggle	
0.04	11	undefined%	8. Returning Home	0.03	17	0.05	8. Border Crisis	
0.03	7	0.08	9. Immigration Process					
0.02	5	undefined%	10. Financial Struggles					
0.02	12	0.15	11. Hardworking Immigrants					

Once the clusters have been found through modularity, we can sort them according to the amount of share they (that is, the large color chunks) have on the full discourse. These are shown in Table 4 for the students' essays, and in Table 5 for the pointed questions. In contrast with Tables 1 and 2, the phrases under "category" in Tables 4 and 5 do not come from the students' prose. The large topics are estimated by looking collectively at the keywords that formed that basin or cluster. As an example, the biggest cluster for Nyall (that exerts 26% influence), the one shown in deep green in Figure 1, is built with crucial topics such as *"field experience," "wall,"* and less crucial topics such as *"area."* We have seen these exact words in Table 1. However, once we scan through these keywords, crucial or not, in the green group, we note they all mainly relate, in some way, shape or form, to *"travel memories"* (please see Table 4). Following the field experience, therefore, thoughts around this broad "travel memories" field is primary in this student's mind.

Table 5: Topical communities from questions

Question 1				Question 2				
Influence	**Total Nodes**	**Percentage of Entries**	**Category**	**Influence**	**Total Nodes**	**Percentage of Entries**	**Category**	
0.41	23	0.25	1. Experience Dynamics	0.4	26	undefined%	1. Language Barrier	
0.12	19	0.25	2. Migrant Narratives	0.2	23	0.33	2. Emotional Farewell	
0.12	19	0.25	3. Time Connections	0.18	23	0.33	3. Strong Stories	
0.1	24	0.25	4. Childhood Reflections	0.09	13	undefined%	4. Compassionate Communication	
0.09	16	undefined%	5. Meaningful Interactions	0.06	12	0.33	5. Interaction Challenge	
0.08	15	undefined%	6. Storytelling Struggles	0.06	5	undefined%	6. Sudden Departure	
0.04	19	undefined%	7. Grateful Moments					
0.02	8	undefined%	8. Birthday Insights					
0.01	7	undefined%	9. Emotional Bonds					

Question 3				Question 4				
Influence	**Total Nodes**	**Percentage of Entries**	**Category**	**Influence**	**Total Nodes**	**Percentage of Entries**	**Category**	
0.35	23	0.5	1. Border Dynamics	0.3	21	0.5	1. Migrant Journey	
0.19	17	undefined%	2. Migrant Perception	0.2	13	0.5	2. Border Crisis	
0.17	12	undefined%	3. Care Concepts	0.15	13	undefined%	3. Cultural Exposure	
0.1	12	undefined%	4. Prison Reality	0.14	12	undefined%	4. Emotional Growth	
0.09	13	0.5	5. Border Dynamics	0.13	8	undefined%	5. Life Realization	
0.07	10	undefined%	6. Migrant Perception	0.08	15	undefined%	6. Exhausting Immigration	
0.03	7	undefined%	7. Care Concepts					

Question 5				Question 6				
Influence	**Total Nodes**	**Percentage of Entries**	**Category**	**Influence**	**Total Nodes**	**Percentage of Entries**	**Category**	
0.29	21	0.5	1. Wall Dynamics	0.3	21	0.5	1. Structured Growth	
0.22	25	0.5	2. Shared Experience	0.26	11	0.5	2. Emotional Decompression	
0.16	12	undefined%	3. Migrant Journey	0.21	19	undefined%	3. Exploratory Time	
0.15	14	undefined%	4. Life Perspective	0.12	13	undefined%	4. Flowing Thoughts	
0.07	4	undefined%	5. Bonding Walls	0.1	11	undefined%	5. Reflective Challenge	
0.06	12	undefined%	6. Moment Living	0.01	4	undefined%	6. Frustrating Feelings	
0.04	9	undefined%	7. Dune Migration					

Question 7				Question 10				
Influence	**Total Nodes**	**Percentage of Entries**	**Category**	**Influence**	**Total Nodes**	**Percentage of Entries**	**Category**	
0.36	18	0.5	1. Learning Dynamics	0.3	11	0.5	1. Class Dynamics	
0.25	10	undefined %	2. Journey Beginnings	0.26	9	0.5	2. Time Relations	
0.24	18	0.5	3. Community Engagement	0.12	7	undefined%	3. Emotional Separation	
0.15	13	undefined %	4. Culinary Experience	0.11	5	undefined%	4. Educational Overload	
				0.11	8	undefined%	5. Class Dynamics	
				0.04	8	undefined%	6. Time Relations	
				0.03	6	undefined%	7. Emotional Separation	
				0.03	6	undefined%	8. Educational Overload	

Question 11				Question 12			
Influence	**Total Nodes**	**Percentage of Entries**	**Category**	**Influence**	**Total Nodes**	**Percentage of Entries**	**Category**
0.28	9	0.5	1. Reflective Writing	0.47	18	0.33	1. Reflective Dialogue
0.22	15	undefined%	2. Journaling Benefits	0.15	11	undefined%	2. Temporal Insights
0.2	8	undefined%	3. Daily Expression	0.15	14	undefined%	3. Connected Learning
0.19	10	undefined%	4. Writing Engagement	0.14	17	0.33	4. Scheduling Stress
0.07	7	0.5	5. Depth Exploration	0.05	6	undefined%	5. Thoughtful Writing
0.05	6	undefined%	6. Open Communication	0.03	6	undefined%	6. Guided Experiences
				0.01	4	undefined%	7. Collaborative Growth
				0	2	0.33	8. Encouraging trips

Question 13			
Influence	**Total Nodes**	**Percentage of Entries**	**Category**
0.29	27	1	1. Connection Dynamics
0.2	12	undefined%	2. Social Bonds
0.19	11	undefined%	3. Presentation Impact
0.16	16	undefined%	4. Migrant Narratives
0.07	10	undefined%	5. Interaction Patterns
0.05	9	undefined%	6. Community Sharing
0.03	5	undefined%	7. Engaging Topics

We note for both the essays and the questions, there are considerable variations in the *number* of these broad themes. Students such as Lyle and Keaton, for instance, have chosen to report on a *multitude* of large thoughts which explain, in part, their high modularity scores seen in Table 3. However, Table 4 brings out what those thoughts exactly *are*. In a similar way, certain issues spark a range of broad talking points. Others, fewer, in comparison.

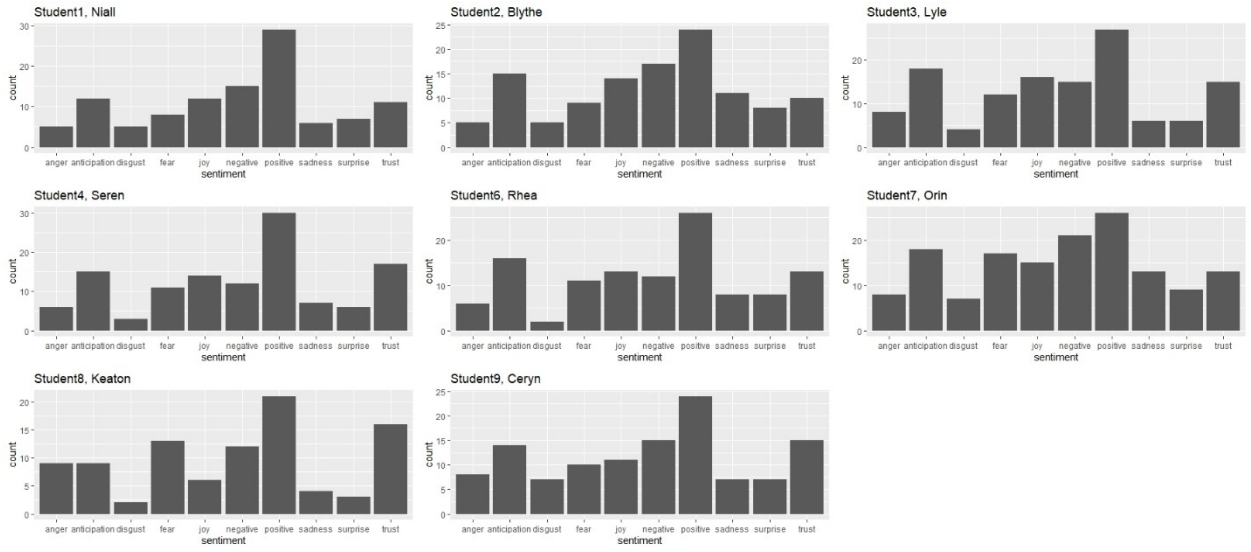

Fig 2: Range of emotions extracted from students' essays.

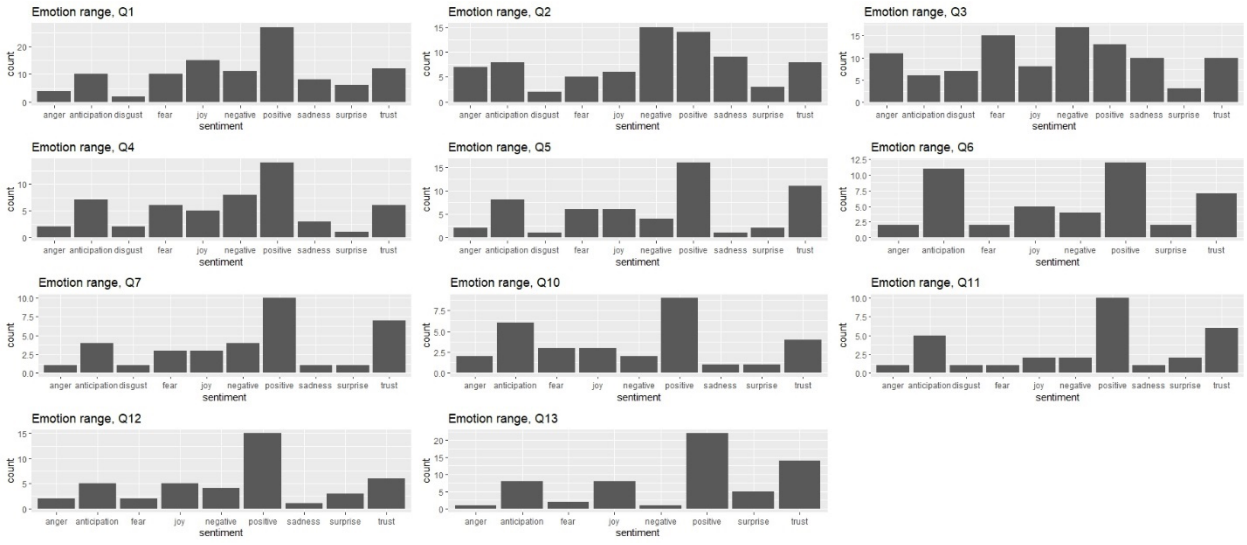

Fig 3: Range of emotions extracted from questions.

We bring our quantitative exercise to a close through a thorough sentiment analysis, through which we seek to go beyond the written words, crucial or not, or even the larger themes they point to, but probe into the underlying emotions that these keywords convey. We place each keyword against the National Research Council (American English) dictionary (Brandes 2001) and keep a record of *all* the emotion categories a keyword may fall into. These categories, shown in Figures 2 and 3, are substantially more nuanced than the *positive-negative-neutral* field experience let seen on Table 3. A keyword such as *"birthday"* contributes to all of the *"anticipation," "joy," "positive," "surprise"* categories, whereas a keyword such as *"build"* falls into only one: *"positive."* Heights of the bars on Figures 2 and 3 reveal how prevalent these ten subtler emotions are.

For all the students, the experience was positive (that is, most of the keywords they wrote evoked positive sentiments); the most common kinds of words seemed to convey good feelings about the experience. For some, the field experience was overwhelmingly positive (that is, the positive bar towered substantially higher than the other emotions)—for others, marginally, but still positive. All the students, through their essays, displayed the fullest range of emotions possible to be recorded, which the facilitator reinforced, saying that students each had their own personal growth and perceptions during the field experience. Their proportions or sensitivities on these ten axes, however, vary. *"Anger"* was most common on question 3, out of all the questions recorded, with confirms our intuition since this question was about images seen at the border. On questions 10 and 13, the range of demonstrated emotions are fewer than ten. Again, some of that reduction is expected. On question 10, for instance, the instructor is asking for alternatives. Emotions such as *"disgust"* are understandably, absent, since it is not very relevant here.

Discussion

Experiential learning offers a powerful medium for fostering introspection, growth, and empathy among students. The setting at the U.S.-Mexico border immerses students in narratives that challenge their worldviews, igniting both personal and intellectual growth, as they witness the complexities of immigration and human resilience firsthand. Our study unveils how these immersive experiences cultivate community, trust, and self-realization, shaping students' emotional landscapes and fostering interconnectedness. Analyzing student reflections and evaluations, we spotlight the transformative power of community-engaged learning, offering educators and practitioners insights into designing impactful experiences. Furthermore, the study sets the stage for future research that could explore reciprocal perceptions of community between students and those in migration, thus broadening our understanding of the impact of such educational exchanges.

Our findings are consistent with Grigorieff et al. (2020) in that students can overcome stereotypical thinking, once educated with evidence. Service-Learning experiences advance their dialogue, as Lohr et al. (2022) found, and they are able to develop critical reflections throughout the field experience (King 2004), which is shown in our figures and tables.

Our interpretations of the findings show that students are overwhelmingly "positive" in their journals (please see Table 3) and nearly all evaluations (please see Figure 2), indicating that they enjoyed the experience. In Figure 2, "negative" is also high for questions where students were to describe what challenges they experienced or myths about the border, but they

also reported high rates of feeling "sad" and "anticipation." We feel this suggests that they were grappling with their worldview being challenged (and envisioning the future), especially because they described it with words such as "realize" and the topics they described were "border dynamics," "strong stories" (from the immigrant narratives) and "emotional farewell." The facilitator was not surprised to see that students felt anticipation because, over the course of the past twenty-five years of leading this program, it is clear that students are stepping into the unknown. This emotional response requires the facilitator to devote significant time to mentoring students and processing the culture shock of a novel experience. Students also processed their negative emotions regarding what they were witnessing and were saddened to leave the people they had met. Overall, we feel these sentiments and responses show evidence that students felt a strong sense of community with the people who shared personal details of their lives with them. In future research, we could compare this with how immigrants at the shelter felt about the students, and if they felt a similar sense of community. However, the facilitator reports that emotional goodbyes between program participants and other guests in the house are common. In recognizing the impeding departure, they convey a sense of celebration, which commonly results in a party or "baile" involving music and cake. The immigrant guests routinely show excitement about decorating in preparation for the event. It is not uncommon for emotional departures between immigrants and students when the final "goodbyes" arrive. Often as students depart from the community the mood in the van is somber.

The word network (Figure 1) and inferences drawn were from are at a fixed time snapshot. In other words, our observations, insightful as they are, are relevant at a specific and crucial moment in history. Once similar data become available from future field experiences, an interesting avenue of inquiry will open up: studying substantial variations in sentiment patterns or thematic shares as the political and social climate shifts. Such change-point methods have been outlined, with the relevant mathematical machinery detailed and nuances outlined (Bhaduri 2022; Bhaduri 2023a; 2023b; Ho et al. 2023; Setiawan and Bhaduri 2023). Possible dependencies amongst sets of specific student pairs may be checked through empirical recurrence rates defined in Bhaduri (2020) and Bhaduri (2018). Causal connections among sentiments through Markov random fields, as explored in Bhaduri (2024), become promising goals to pursue. Related change analysis over the time domain may be conducted along stochastic lines (Bhaduri and Ho 2018; Bhaduri et al. 2017; Bhaduri et al. 2017; Bhaduri and Zhan 2018; Ho and Bhaduri 2017; Ho and Bhaduri 2015; Zhan et al. 2019). We could track the impact the study had on this specific cohort if the facilitator conducts follow up surveys regarding their retention, which could confirm the long-lasting impact of the studies that Grigorieff (2020) outlined. It would be interesting to contrast the results from this study to a similar conducted with students from a university closer to the border.

The data also shows that "trust" is also among the highest sentiments for nearly every question. We interpret this to be indicative of their sense of community, including those in migration, the formal volunteers at the shelter, and fellow students (depending on the question). Students engage in open dialogue about their feelings and interpretations of what they have witnessed, which warrants substantially trusting others in sharing how they process and interpret their experiences throughout the field experience. The field experience stretches those boundaries. Students are in a space which is out of their usual comfort zone and results in a need to build trust, acceptance, and communal support, so they need to learn to rely on each other and process the experience overall. The facilitator describes one dimension of this as

"needing cry space" in solitude or in a group. Program participants frequently shed tears during reflection. Students were directed before the field experience to accept this about each other and show support when it happens.

Other responses on the evaluation, such as with describing how the field experience has affected them personally, emphasized that the "migrant journeys" and "border crisis" left them with increased feelings of "anger" (see Figure 2) about feeling a sense of "cultural exposure," "emotional growth" and "life realization" (please see Table 5), which we feel affirms the goals that the facilitator set out to accomplish for the field experience. Students also valued the student-guided reflections, spotlighting the "reflective dialogue," "connected learning" and "collaborative growth," which we feel confirms that learning among a community group of students was meaningful and successful.

When asked what the most meaningful experience was at the border, students showed high rates of "joy" (please see Figure 2) as they reported feeling grateful, they found meaning in hearing narratives from immigrants and interacting with them, that they struggled emotionally when describing in their own journals the stories that they had heard, and that they reflected on their own childhoods (please see Table 5). Many students also found that when the group celebrated the birthday of a migrant guest to be especially emotional. We feel that these responses indicate that the students found the field experience to be especially emotional.

When we consider responses from students such as Nyall, Lyle, and Blythe, we interpret these as affirmations of the overall humanization of immigrants. Additionally, these responses spotlight the students' feelings of connectedness as well as their self-analysis and reflection. This signifies that the experience fosters both empathy and personal growth. To notice in the data collected that students report grappling with ideas of community at the border confirms the intentions of the field experience. The facilitator of the field experience intended to shift students who have been impacted by misinformation by reframing their perspective through offering them to live these experiences intimately for themselves throughout the immersion. The general thrust of the field experience is to place students in "zones of discomfort" (Dewey 2016) leading to reflection on the course goals of self-reflection, humanizing "the other" (Mead 1934); and critically thinking about social structures, which are problematic and manifest themselves in the border reality. By moving into these zones of discomfort, the field experience challenges students to think beyond the self, extend empathy toward the other and envision structural forces at play.

For experiential practitioners, there are four critical lessons to take from this research: (1) preparation and design, (2) emphasis on "communal living," (3) reflection, and (4) establishing trust. The aim of this paper is not to suggest that CBL can be easily implemented. In fact, CBL-centered design entails substantial time and effort. First, this program's community partnership was intentionally developed over the course of twenty years, allowing for meaningful dialogue grounded in trust and reciprocity to mutually benefit all parties involved. For educators eager to take advantage of the impacts of CBL, community-centered design is critical. Such opportunities should not be developed at the pace of student demand, but instead in response to community partner needs. This becomes increasingly important when considering programs hosted by PWIs, especially considering how common PWIs are in the U.S. and the recent increased likelihood in campuses becoming a PWI (Korn 2024).

The second lesson demonstrates the importance of "living in community," creating circumstances where those directly marginalized by border politics can share their experiences in relational exchange with students. This becomes crucial for overcoming the stereotypes

populated by wider webs of misinformation. While educators must provide curriculum on the border, these teachings are made more permanent through the interactive design of this program.

The third lesson demonstrates the importance of reflective practice throughout CBL. Through journaling and facilitated discussion, students were prompted to put their experiences into words in a more student-driven way (rather than teacher driven) and directly contrast their newfound understanding of the border with their previous assumptions. Such journaling provided data that researchers can use to demonstrate how students experience a myriad of emotions in response to living at the border. Facilitated reflection allows educators to provide space to process emotions so that students can be moved to action.

The final lesson emphasizes the pivotal role of trust in effective CBL. Living and travelling in community forces students into these zones of discomfort as it is novel and a challenge for many participants. Establishing a sense of cohesion within the group, especially as the group begins its journey, is central for developing a sense of community throughout the field experience. It establishes needed support and trust and ideally facilitates an immersion experience that is meaningful for students and ideally formative in a lasting sense. The immersion experience moves people from focusing on the abstract to the distinct and makes it a reality for the student to trust their own involvement with the issue. It fosters an ability to humanize rather than demonize the migrant. It creates a space where the narratives of media soundbites can be critically judged side-by-side with the lived experience. This allows participants to take ownership of counter-cultural, but very real, experience living in community and solidarity with others.

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Appendix A

Border Awareness Experience Evaluation

Thank you for filling out this evaluation. I am gathering this information from you so I and [the shelter] can prepare to receive future groups who want to visit [the shelter] and the border. Your comments and reflections are very helpful to me as I plan to future border awareness experiences.

Name _____ Group: _____

Address _____ E-mail: _____

Date: _____

1. Name and briefly explain the most meaningful experience(s) of your time on the border.
2. What interactions most challenged you? What did you learn from them?
3. What myths, images, or ideas about the border have been challenged in the wake of this experience?
4. How has this experience affected you personally?
5. If you were planning a border experience, what would you feel should be absolutely included? Please explain why.
6. How was the pace of the ten-day experience? Too fast? Too slow? Too much unstructured time? Too little? Please consider specifically the six-day BAE component when responding.
7. What things could be skipped?
8. If a particular item is ranked low on the preceding page, I am requesting that you consider possible alternatives that you would like to see included in the program. Please add those comments below.
9. As I have stated many times before, the journaling component is very important. Please add some comments on how I might be able to promote this component more in the future.
10. What are your thoughts about the reflective component of the program? How could this component be strengthened? Particularly, what are your thoughts about the use of student guided reflections?
11. Finally, decompression and re-orientation to your life back home is important. What suggestions do you have for follow-up on this program? We will, as a part of the course, present to student groups, write an article for the university newspaper and develop a Power-Point to inform/recruit the next generation of students. What else can be done?