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New RRB Submission

Data Entry

- Submitted 03/12/2023 11:27 AM ET by Vossoughi, Shirin

Submission Type

RRB Number	2020-1616
Study Title	Cultivating Expansive Learning at the Intersections of STEAM, Critical Literacies, and Civics Education
Event Type	Not owned by an event.
Schools Participating	No answer provided.

SUBMISSION TYPE INSTRUCTIONS AND OPTIONS

"New Submission" - if this is a brand new RRB proposal OR you need to make requested revisions to an RRB submission that is NOT yet approved.

"Entry of RRB project that was previously-approved outside of IRBManager" - if you would like to enter a project into IRBManager that was reviewed and approved outside of IRBManager (i.e. before IRBManager was implemented at CPS). For this selection, there must be no changes in your study protocol from when your study was previously approved.

"Modification/Continuing Review of RRB Project Previously approved outside of IRBManager" - if you would like submit a modification for a study that was **approved outside of IRBManager (i.e. before IRBManager was implemented at CPS).**

Type of Submission

Entry of RRB project that was previously-approved outside of IRBManager

Please enter your RRB Protocol number below. If you're unable to find your RRB Protocol number, please indicate this in the following question.

2020-1616-CPS

If you're having problems looking up your RRB submission number, a "%" can be used in front of a sequence of numbers to find a RRB number containing that sequence. For example, inputting "%123" would bring up studies "2025-7123" and "2026-9123" (these numbers are examples and do not exist in the system.)

Were you able to find your RRB Protocol Number using the previous lookup function?

Yes

Pertinent CPS Documentation

Submitter

Vossoughi, Shirin

Email: shirin.vossoughi@northwestern.edu **Business:** (424) 298-7573

Overview of Pertinent CPS Documentation

The RRB is composed of members representing various Central Office academic departments as well as the Law Department. The RRB meets quarterly to evaluate new proposals to conduct research. The RRB calendar and deadlines for submissions can be found on the CPS Research Website [here](#). Decisions resulting from the research review process will be communicated to the applicant of the request as well as appropriate CPS staff in accordance with the estimated timelines outlined in the respective RRB calendar. External researchers may not begin any research activities or obtain data for research purposes without first following the procedures outlined in this policy and securing the necessary approvals.

We expect all researchers to be familiar with the guidelines and policies guiding research within the district. Please verify that you have read and acknowledged the following:

External Research Study and Data Policy

✔ I have read and understood the External Research Study and Data Policy

CPS RRB Guidelines

✔ I have read and understood the CPS RRB Guidelines

CPS Equity Framework

✔ I have read and understood the CPS Equity Framework

CPS Vision

✔ I have read and understood the CPS Vision

CPS Volunteer Policy

✔ I have read and understood the CPS Volunteer Policy, including background check requirements

Study Personnel Details

Study Title

Cultivating Expansive Learning at the Intersections of STEAM, Critical Literacies and Civics Education

Does your organization participate in a Research Practice Partnership (RPP) with Chicago Public Schools?

Yes

Please select the RPP with which you are affiliated

Northwestern SESP

RPP Point of Contact

Lynn Grabarek, Jana

Email: jana.grabarek@northwestern.edu **Phone:**

Principal Investigator

Vossoughi, Shirin

Expirations:

**Background
Check
Level:**

PI Organization

Northwestern University

If the form indicates "not found" when you add the Principal Investigator, please use the link below to add the contact to the IRBManager system.

User had the option to start a different form here.

Are there any other study contacts?

No

If the person completing this form is not the Principal Investigator, it is suggested that the submitter be entered as a contact.

Is the Principal Investigator a Student?

No

Is the researcher a CPS Staff Member?

No

Funding and Intervention Information

Is this project contracted by the CPS Board of Education?

No

Is a funding source associated with the proposed research?

Yes

Who is the primary funding source?

CPS/SESP Rapid Impact Grant

What is the amount of funding awarded?

\$28,462.00

Please list primary contact information of funder.

The grant was originally funded through the CPS + Northwestern Rapid impact grant fund in the amount of \$28,462. There was a follow up supplemental grant provided by SESP through the Steans Family Foundation in the amount of \$20,000.

Select the option that applies to your study

My study will involve a selection of individual schools

Please select all potential school sites involved with this study

Chicago Vocational Career Academy High School
Lincoln Park High School
Nicholas Senn High School
Walter Payton College Preparatory High School

Will this research require any in-person interaction or intervention activities?

No

Will this research require any virtual interaction or intervention activities (Google Meets, Zoom, etc.)?

Yes

Please note that Zoom is not approved for use with CPS Students. Any virtual activities will need to be conducted via Google Meets and safe@cps.edu must be invited to Google Meet. Please adjust virtual methods accordingly. For more information on permitted interactions with students and staff, please visit <https://www.cps.edu/about/policies/acceptable-use-policy/external-volunteers/>.

Please review CPS's Acceptable Use of Technology Guidance (AUP)



Questions about eligibility or appropriate use of communication channels should be directed to the school principal or CPS External Research department. Only CPS-approved communication channels may be used.

Please be aware that virtual interviews involving students may only be conducted via Google Meets. A CPS Staff member must be present for the entire duration of the interview. For more information on CPS' Acceptable Use of Technology policies, please visit <https://www.cps.edu/about/policies/acceptable-use-policy/external-volunteers/>

Please check all of the following that apply to your research protocol:

A note here is that we had a series of meetings with teachers to co-design their design circles with students/teachers/families. These are being framed as focus groups for purposes of RRB submission but could also be seen as observations of PLC style meetings with teachers. Happy to elaborate on the methodology here.

03/12/2023 • Vossoughi, Shirin • *Not Internal*

Focus Groups

Please outline your protocol for focus group activities, describing when, where, duration, frequency, and with whom.

Teacher focus groups (language we previously submitted and was approved): we will hold a series of (4-5) school-based co-design meetings at each of the partnering schools that involve only participating teachers and a small team of (5-6 students). The researcher will not join these virtual (google classroom/meets) meetings herself.

She will instead hold a weekly meeting with participating teachers to a) support their ongoing co-design facilitation and b) gather initial information about the co-design process. We will not gather data on specific students, but rather support and ask the teachers about how they see the general process unfolding. These weekly meetings with teachers will be documented through fieldnotes and audio recordings (assuming all teachers consent to the documentation). If any teachers do not consent to the documentation, these weekly meetings will be documented through fieldnotes and the comments of non-consenting teachers will not be included in the record. The curricular units themselves created through the design process will also become part of the data set, pending consent of participating teachers.

Student focus groups (language previously submitted/approved):

Consent process: the nature and purposes of the research will be clearly explained to all participants using the recruitment script approved by Northwestern University's IRB. It will be made clear that participants can be part of the co-design process without opting in to participate in the research study. Recruitment and consent will proceed similarly for students in the focus group portion of the study (Fall 2020/Winter 2021) -- see attached consent forms for additional details.

Students will be recruited from those who participated in the summer co-design institute alongside their teachers. We anticipate that this may involve no more than 25 high school students total across schools. We will conduct 1 focus group lasting around 60 minutes with students at each participating school. As elaborated below, these will be the same students who participated in the summer institute/co-design and the goal of the focus group will be to learn about their experiences co-designing curriculum with their teachers and with one another.

Recruitment of CPS students for focus groups will take place over email. CPS students have already been in communication with PI Vossoughi over email as part of the larger co-design process and to receive their stipends for participation in the summer design work. These stipends have already been processed so there is no risk that students will feel coerced to participate in the focus group in order to receive their stipends for the co-design work over the summer. (They will receive a separate \$25 gift e-card for participating in the focus group). The attached recruitment email will be sent to CPS students in order to explain the study and their voluntary participation in the focus group.

For the Fall 2020/Winter 2021 student focus groups, links to the attached

student assent forms in Qualtrics will be sent to students directly over email with the attached recruitment script. Students who participated in the summer co-design will be contacted individually to describe the focus groups and ask if they would like to participate (using the recruitment script text). For the Fall 2020/Winter 2021 student focus groups, links to the attached student assent forms in Qualtrics will be sent to students directly over email with the attached recruitment script. Students will be invited to ask any questions or points of clarification over email with PI Vossoughi. Students who wish to enroll in the study will then be asked to indicate their assent on the Qualtrics form (through selecting "I assent" or "I do not assent" and typing in their name) and provide an email for a parent/caregiver to whom Vossoughi will send the link to the Qualtrics consent form for the parent to review (to account for dual-authentication, the email will be sent directly to parents/caregivers). Similar to students, parents/caregivers will be able to select "I consent" or "I do not consent" and type in their name to serve as a signature (which will be clearly stated on the Qualtrics form). The form will state: "I understand that by typing my name in the space below I am signing this form and therefore am indicating whether or not I provide informed consent for my child to participate in this study." (Students will also be asked if it would be helpful to send the parents' recruitment email and consent form in a language other than English.) The email to parents/caregivers will involve its own recruitment script and parents/caregivers will be able to ask PI Vossoughi any questions over email or by calling her directly. Once both the student assent form and their parent/caregivers' consent form are received they will be considered enrolled in the focus group portion of the study. As soon as both forms are received, the PI will sign the form itself using a PDF signature and send a copy to both the student and parent/caregiver for their records.

Data Collection and Analysis: Documenting the design process will allow us to respond to our research questions by tracing the genesis of rich models for conceptualizing critical interdisciplinary learning as well as the development of specific curricular and pedagogical approaches. Our primary data sources are teacher and student reflections on the co-design process.

The number of students in each focus group will vary by school, but will be between 3 and 8 students (corresponding to the number of students who participated in the summer co-design in each context). The kinds of questions students will be asked are outlined in the attached student focus group protocol. These include questions about their first impressions of co-design, key moments they remember as particularly important to the process, whether co-design opened up new ways of thinking about education or interdisciplinary learning, how they think we could improve the co-design process and whether they think it would be valuable for future students to design curriculum and teaching alongside teachers.

We will work to ensure privacy by encouraging students to select a quiet and comfortable place to be during the focus group. However, if family members are present or overhear students' responses, we do not anticipate that this will present a large risk given that the kinds of questions we are asking are focused on students' experiences in the co-design process and do not probe about personal or familial issues. Privacy will also be supported by using

pseudonyms for students if any of their responses are shared within the general writing and reports that result from the work. This is stated in the assent/consent forms as well.

For student focus groups, a teacher who participated in the summer co-design with students will be present (we will be using google classroom). The participating teachers from each school are prepared and enthusiastic about joining the focus groups and helping create a space to learn about students' reflections on the summer co-design process. All teachers who would participate in the focus groups are already enrolled in the study. Their (minimal) participation in the focus groups will therefore fall within the scope of their existing enrollment in the research. The purpose of the teacher's presence is two fold: 1) to meet the requirements of CPS to have a school staff member present when students are engaging with the researcher; and 2) while the researcher will be asking the questions and working through the focus group protocol with students, the teacher may have their own thought or reflection to share in conversation with students since they were the ones doing the co-design with students over the summer. These roles will be clearly laid out at the start of the focus group so that teachers know they are primarily there to listen/observe but can chime in if they think it would be helpful to extend an idea or remind the group of a specific aspect of the project. This is in keeping with the collaborative nature of our work with teachers and students, since the focus groups serve as a space for collective reflection on the co-design process.

A risk here is that students may feel uncomfortable sharing more critical feedback about the design circles with their teachers present. Vossoughi will help to mitigate this risk by clearly stating from the outset that students should a) only share what they feel comfortable sharing and b) that any constructive feedback they have for us as a team will be helpful for the ongoing development of the project. Teachers will also reinforce this through their participation and the spirit of the work thus far has been collaborative so we anticipate that the focus groups will create a space for ongoing shared reflection on the work. However we will not push for critical feedback in ways that make students feel at all uncomfortable sharing with their teacher present.

Does this involve video, audio, or photograph recording?

Yes

Please describe the protocol for audio/video recording

see above

Please describe how data will be captured and stored securely

We will catalogue and make activity logs for all audio recordings of focus groups. Similar to the fieldnotes, activity logs segment a given audio recording based on 2-3 minutes chunks that align with natural shifts in activity and summarize what participants were saying and doing during that time. These activity logs will then be utilized within our data analysis software alongside fieldnotes and other data to help us identify the typicality and atypicality of our qualitative codes. In addition, creation of activity logs serves as a process through which to identify particular segments for closer micro-ethnographic analysis. Interviews with enrolled teachers will also be

transcribed and coded as part of the data set.

Security & Privacy: All fieldnotes, audio and interview data will be stored on the Northwestern RESFILES secure server. Only the PI and approved members of the research team will have access to the files. As described in our consent forms, if data is shared with others it will only be in the form of a conference presentation or professional development workshop, it will not be given over as a file to any other person or entity. All names and other identifying information will be removed from the study and a pseudonym will be created to protect study participants' privacy. The list of pseudonyms will be kept separately in a password protected PDF file on RESFILES.

Please attach all study materials corresponding to focus group procedures (i.e., consent forms, protocol, recruitment and incentive plans)

STEAM & Critical Literacies Consent Form_Teacher & Adult Participants_Vossoughi.docx	Consent Forms
STEAM & Critical Literacies Parent Consent Form Group 1_Vossoughi.docx	Consent Forms
STEAM & Critical Literacies Parent Consent Form Group 2_Vossoughi.docx	Consent Forms
STEAM & Critical Literacies Student Assent Form Group 1_Vossoughi.docx	Consent Forms
STEAM & Critical Literacies Student Assent Form Group 2_Vossoughi.docx	Consent Forms
Student Focus Group Protocol.docx	Focus Group Protocols
Teacher Interview Protocol_Vossoughi.docx	Focus Group Protocols
STEAM & Critical Literacies Recruitment Scripts v2 (1).docx	Recruitment Materials

Will this research require the use or access of existing CPS data?

No

Will this research require the use or access of existing non-CPS data?

No

Study Details

Please select all of the following that will be participating in the study?

Students
Teachers

Will any of these students be under the age of 18?

Yes

Please be aware that the inclusion of study subjects younger than 18 requires active, written consent from the parent(s) or guardian(s). The consent form needs to explicitly inform parents of their rights to review all materials used with their children as provided for in the Protection of Pupils Rights Act. Please ensure you have added the following statement to your consent form(s) verbatim, with the appropriate personalization for your study:

"Parents please be aware that under the Protection of Pupils Right Act 20 U.S.C. Section 1232 (c)(1)(A), you have the right to review a copy of the questions asked of or materials that will be used with your students. If you would like to do so, you should contact [INSERT APPROPRIATE CONTACT] at XXX-XXXX to obtain a copy of the questions or materials."

Has this project been reviewed by an Institutional Review Board (IRB)?

Yes, and it was approved

IRB of Record Name

Cultivating Expansive Learning at the Intersections of STEAM, Critical Literacies and Civics Education

IRB Protocol Number

STU00211965

Please attach all of your IRB documentation here (include approval/exemptions letters, IRB study protocol, etc.).

Correspondence_for_STU00211965-MOD0008.pdf IRB Letters
STEAM and Critical Literacies IRB Protocol Vossoughi_v7.docx IRB Protocol

IRB of Record Primary Contact Email Address

katherine.wright@northwestern.edu

Please select your primary area of research from the following:

General Curriculum and Instruction

Secondary Study Subject(s)

Equity
STEM Education
Teaching and Learning

Study Overview

Executive Summary or Abstract

Please provide a high-level overview of your study, including a summary of the motivation, design, and implications of the project.

Working closely with CPS teachers, this research advances the co-design, implementation, documentation, and sharing of curricular and pedagogical models that support expansive learning at the intersections of STEAM (science, technology, engineering, arts and math), critical social analysis, reading and writing. This vision seeks to address the field-wide need to: 1) expand critical civics learning across disciplinary domains; 2) design for robust forms of literacy learning within STEAM projects that support young people to analyze and transform the social issues they see as pressing within their communities; and 3) carefully document and share the pedagogical practices that support deep learning at the intersections of STEAM, critical literacies and civics education.

This initial phase of the project (supported by the CPS + Northwestern Rapid Research Grant) begins with teachers at four high schools. This core group of (6-7) teachers have a shared commitment to developing expansive learning experiences that leverage multiple disciplinary tools and perspectives (scientific and mathematical concepts and practices, critical texts and written genres, social scientific inquiry, etc.), supporting high school students to analyze and address the social issues that impact their everyday lives, and creating resources for teachers invested in similar visions within and beyond their schools.

Specifically, we will implement and document processes of co-design with a small group of teachers, students and families from each school in Summer 2020. This co-design process is aimed at curricular units and pedagogical practices that support robust and rigorous forms of transdisciplinary learning. In partnership with teachers, we will also minimally document implementation in the 2020-2021 school year through curricular documents and student focus groups, with appropriate permissions from students and parents/caregivers, and with appropriate adjustments for shifts in learning arrangements based on the COVID-19 pandemic.

Research Questions and Hypothesis

Please list all research questions and hypotheses associated with this project.

This project initiated and developed a partnership between Northwestern University and local high school teachers working towards critical interdisciplinary learning. Our broader vision advances the co-design, implementation, documentation, and sharing of curricular and pedagogical models that support expansive learning at the intersections of STEM, critical social analysis, reading and writing. Supporting teacher development in this area requires opportunities for co-design and learning among teachers, and for meaningfully collaborating with students, families and community members to develop projects that address local concerns and visions. The key questions guiding our project therefore included: What forms of thinking, learning and action emerge at the intersections of these domains? How can we best support teachers to co-design, implement and reflect on such learning? Given the constraints of COVID-19 during the 2 year timeline of our project, our design and documentation focused on 1) bringing together teachers across schools to engage in co-design of transdisciplinary curriculum; and 2) supporting teachers to engage in co-design with a team of colleagues, students and in some cases, parents/caregivers at their respective schools. Since we were not able to document co-design processes or implementation at the school level, our research focused on the teacher co-design and ongoing reflection, artifacts created, as well as key reflections from student participants in focus groups.

Purpose and Literature Review

Please provide an overview of the existing research and literature on this subject. What is the contextual history of this subject area and how does this research build upon the body of extant knowledge?

This project addresses a number of inter-related problems of practice. First, we know that curriculum and pedagogy are most effective and equitable when they are meaningfully connected to students lives and community histories, particularly for students underrepresented within STEM fields. Socially and culturally engaged STEM learning holds great promise both for deepening student engagement and for expanding the disciplinary domains themselves to address pressing global and local issues. While NGSS supports deeper connections to professional practice, the need to develop STEM learners and professionals equipped to wrestle with the complex social and ethical issues of our time is a leading edge of the field. Moving in this direction requires additional skillsets and opportunities for both students and teachers, including how to support meaningful discussion, thinking and learning at the intersection of science, math and critical social analysis, and how to support students to engage in critical reading and writing that deepens their STEM ideas, questions and projects. Efforts to deepen and expand civic education also require an interdisciplinary view of social analysis, action and imagination. For social science, civics and English teachers, working closely with STEM teachers therefore allows for deeper connections across domains, and positions reading and writing as more than preparation to engage in other content areas, but as rigorous skillsets crucial to critical thinking across fields.

Supporting teacher development in this area also requires opportunities for co-learning among teachers, for experiencing one another's practice, and for meaningfully collaborating with students, families and community members to design projects that address local concerns and visions. Finally, supporting such learning at scale requires that we not only develop and share models of rich curriculum, but also provide example-rich syntheses of pedagogical practice and tools for recognizing the rich forms of student thinking and learning that can emerge across domains.

The last decade has seen a rise in educational research and design that conceptualizes equity in STEM as tied to a critical widening of the disciplines and professions themselves, whether in science (Medin and Bang 2014; Morales-Doyle, 2017); making and computer science (Vossoughi, Hooper, and Escudé 2016; Pinkard et al. 2017;); engineering (Philip et al. 2018) or mathematics (Gutiérrez 2017; Gutstein 2012; Nasir 2002). Rather than treating STEM knowledge and practices as settled (Bang et al. 2012), this body of work crucially asks: Which histories and ways of knowing are valued or erased? And, STEM for what purposes? (Sengupta-Irving & Vossoughi, 2019). These questions align with the broader imperative to support students engage deeply with disciplinary domains in ways that are rooted in rather than separate from their histories and communities.

Though these contributions and the many educational projects that resonate

with them have expanded the meanings and purposes of STEM learning, less often does the literature address the role of critical reading and writing within such expanded visions for STEM. In practice, there are a growing number of STEM teachers who aim to develop curriculum and pedagogy that is socially and culturally relevant, but who may not feel equipped to facilitate the kinds of social analytic inquiry and civic dialogue that such work requires. Our own research interviewing STEM professionals with a social justice orientation has revealed that many name particular social scientific texts as pivotal to their own thinking and work regarding social problems such as waste-water treatment or environmental racism. This is also a challenge at the university level, where STEM students who are interested in social, political and ethical questions may have little room to take courses in social science, or Ethnic studies. As teachers within our recent co-design session asked, "what kinds of mathematicians, scientists, and architects are we developing?" In line with the emergent CPS equity framework, discovering and cultivating the unique gifts, talents and interests of every young person requires a view of STEM disciplines as not only *open to* students' real interests and concerns, but as heterogenous and evolving domains of knowledge that require the intellectual and cultural ways of knowing of diverse communities. From this perspective, holistic learning and identity development and deep academic engagement are closely intertwined (Nasir, et. al., 2006).

This project aims to address these gaps by working closely with teachers to co-design, implement and document curriculum and pedagogy that meaningfully integrates STEM learning with critical literacies. To this end, we ask: What forms of thinking, learning and action emerge at the intersections of these domains? How can we best support teachers to design, implement and reflect on such learning?

Research Activities and Student/Staff Involvement

Please provide an overview of all primary and secondary research activities associated with this study. Please use this space to describe, as thoroughly as possible, all that will be asked of your research subjects (e.g. surveys, focus groups, observations, etc.)

The following is the original timeline of research activities, followed by phases of data analysis and writing that have continued until the present:

April-July 2020: Preparation and co-design meetings with lead teacher to develop plan for co-designing with students, teachers and families at their schools.

Late July 2020: Launch our summer design institute with teachers, students and family members (parents/caregivers). Key goals involve 1) Collectively envisioning educational possibility; 2) Engaging in historical and community based research that supports curricular and pedagogical design; 3) Co-developing and iterating units that will be implemented in the Fall 2020/Winter 2021; and 4) Building community across school teams through processes of reflection and feedback on curriculum and pedagogy. During July we also plan to apply for additional funding to expand the project in the future.

August & September 2020: Wrap up co-design work and teacher focus groups.

Fall 2020: Begin data analysis of summer co-design and teacher focus groups, develop approach to student focus groups. Gain IRB and RRB approval for student focus group.

Winter 2021: Complete data analysis of summer co-design process and teacher focus groups. Conduct student focus groups and weave in the analysis of focus group data. Begin developing final report for CPS.

Research Methodology and Analytical Technique

Please provide an overview of your research methodology and specific analytical techniques that will be utilized as part of this study.

Our initial phase responds to our research questions using a participatory design methodology (Bang & Vossoughi, 2016). This approach treats teachers, students and families as co-designers of academically rigorous and equitable learning, and understands *processes of partnering* as key foci of documentation. We will draw on qualitative methodologies of data collection (fieldnotes, audio recordings and focus groups) to document the process of co-design during the Spring and Summer of 2020. This documentation will allow us to trace the genesis of rich models for conceptualizing critical interdisciplinary learning as well as the development of specific curricular and pedagogical approaches. We are particularly interested in understanding the conditions that support meaningful co-design among teachers, students, family and community members and learning scientists during the summer institute. Here it is important to note that the core group of teachers named above bring a wealth of experience with critical forms of STEM, Social Science and English teaching, and are eager to collectively deepen their practice and offer resources for the field. This strand of work will yield an **expected product** that articulates the method of co-design across key stakeholders, and offers key insights into democratizing decision-making around curriculum and pedagogy, as well as supporting teacher learning and leadership development. This phase will be followed by analysis and student focus groups in Fall 2020 and Winter 2021 (see previous pages for detailed description of focus group methods).

Here are some additional language around methods from the Northwestern approved IRB protocol:

For CPS teachers, we will not be recording or documenting their co-design sessions with high school students during summer of 2020 due to CPS' current restrictions on virtual volunteering. However, during the time when teachers are engaging in co-design with students (end of July-August 2020), we will hold weekly 1-hour focus groups with the teachers. These focus groups (3-4 total) will create a space for teachers to share their professional expertise and reflections on the co-design process. Teachers will be asked to speak in general terms rather than describe interactions with specific students (see focus group protocol). If any student names are mentioned, they will not be included in the data that is analyzed. These sessions will provide data on teachers' reflections/perspectives regarding the process of co-designing interdisciplinary curriculum with students.

Where full consent is provided for audio recording focus groups with teachers and students:

The use of audio recordings within the data analysis will take a number of different forms. Audio will be used to supplement the information that was

gathered through raw jottings in order to develop a more comprehensive fieldnote. This will involve listening to the audio and writing play by play accounts of events as well as our interpretations of those events. The research team will catalogue and make activity logs for all audio recordings. Similar to the fieldnotes, activity logs segment a given audio recording based on 2-3 minutes chunks that align with natural shifts in activity and summarize what participants were saying and doing during that time. These activity logs will then be utilized within our data analysis software alongside fieldnotes and other data to help us identify the typicality and atypicality of our qualitative codes. In addition, creation of activity logs serves as a process through which to identify particular segments for closer micro-ethnographic analysis. Focus groups with enrolled teachers and students will also be transcribed and coded as part of the data set, with an eye towards answering our research questions.

Benefits and Commitment to Equity

Benefit to CPS

Which (if any) CPS vision goals does your research support?

50% of students will meet college readiness benchmarks on the SAT.

78% of graduates will enroll in college.

90% of students will graduate high school within five years.

Click here to access more information on the CPS Vision Goals.

Please describe how your project supports each of the Vision Goals selected above.

Our project supports reimagining what is possible with learning at the high school level by bringing together teachers across domains to design for expansive transdisciplinary learning. As our focus groups attest, this process supported participating students to build new relationships with learning in ways that spill out beyond the co-design experience and into other courses and learning experiences. These new relationships with learning and with one's own capabilities support the goals above.

Which (if any) of the CPS core values does your research support?

Academic Excellence

Community Partnership

Equity

Student Centered

Please describe how your project supports each of the core values selected above.

We found three (interrelated) design elements that help create robust conditions for co-design and learning: the power of beginnings, sustained investment in relationship building, and a routine emphasis on embracing the process of co-design and learning. These findings directly contribute to the growing scholarly literature on participatory design research in ways that illuminate the empirical qualities of relational work required for meaningful co-design and community partnership.

We also found that the collective's initial approach to interdisciplinarity involved challenging settled boundaries, such as the hierarchies between the intellectual and the everyday, or hegemonic views of who counts as a scientist. Initial planning meetings involved in depth conversations about questions of rigor, what counts as mathematics, abstract vs. experiential knowledge, to name a few. There was also a key focus throughout the project on legacies of harm within STEM fields. In the midst of widespread social protests following the murder of George Floyd, as well as the racial inequities further illuminated by Covid-19, there was an urgent need to move beyond the constraining boundaries of disciplines. Over time, we built with these critical stances and moved towards generative discussions of educational and pedagogical possibility. This was supported by intentional pedagogical moves that worked to seed an expansive design imaginary, such as pushing beyond binaries of teacher vs. student led education, and reimagining constraints on pedagogical creativity. This phase of our work

involved questions such as “Which histories and ways of knowing are valued or erased? What are the deeper purposes of learning?” Such questions allowed us to dig into the complexities of teaching about urgent social problems such as the pandemic and climate change in ways that are empowering and nourishing to young people. Dwelling in the question of what just learning looks like also allowed the group to shift from a conventional focus on covering content towards a deeper view of how we are creating conditions for human learning, becoming and development. As one teacher noted, “the goal here then would be to develop human capacity...What is going to make you a well-rounded human being that will speak to those strengths, and how can you leverage those strengths for the greater good?” Students within our focus groups commented on the ways they sensed possibilities for deeper learning and increasingly noticed opportunities for transdisciplinary connections across their courses.

How does this project support the district broadly?

We found key forms of student learning narrated through our focus groups at each school. These included: shifting and deepening relationships with teachers that disrupted and transformed normative hierarchies of knowledge and power; a consistent sense of deeper understanding and retention of key ideas within the subject areas worked on in co-design; a sense of joy in the intellectual complexity illuminated through transdisciplinary design and the relationships cultivated between academic learning and personal and community knowledges; a revelatory experience of learning as a shifts in relationships with ideas and the world that is much more than completing homework and tests; and a carrying forward of key experiences from co-design into other contexts, including advocating for change in other classes or creating similar learning experiences for peers.

Teachers also described shifts in their own learning and approach to curriculum, design and pedagogy. Both teachers and students described how the co-design led to shifts in their approaches to teaching and learning processes and goals, including what it looks like for learning to feel deeply connected to students’ lives, and how a diverse group of people can come together to design for the possible within school settings. As one of our math teachers described, “I think the traditional thinking is teach a skill, hope you can apply it. And I think that what really came out of this was doing an authentic exploration leads to skills that you need to learn.” Another teacher described important expansions in how they understand funds of knowledge and connecting with students’ life-worlds: “I think that I’ve always considered funds of knowledge as like the familial or like everyday knowledge that students already have about topics, as opposed to thinking about their ability to contribute to a lesson based on like, not only what they want to know, but then like what they’re willing to learn about it. Um, because that’s been something that’s really interesting is listening to these students, co-design these lessons is they don’t, like, they’re seeing things that they didn’t know before, and then they are looking into more information about it and bringing that in. So it’s not just about them dumping everything that they already know.”

Further, teachers worked collectively to design structures and approaches that allow us to think with students in ways that many described as a shift in

knowledge development that helped to deepen their practice. Another success is the increased capacity for co-design amongst teachers in the district who can play a leadership role in this work. Three of the educators that worked with our team on the broader project (across districts) are also pursuing their PhD's while continuing teaching or staying connected to their districts. This connection to the work of educational research was also supported by engaging lead teachers in co-analysis of focus group and other data generated from the project in ways that substantiate participatory design research and the multiple perspectives required to engage in robust data analysis. Some teachers have also described how they no longer feel content with teaching their disciplines in silos, and continue to seek out opportunities to work across disciplines at the school level, illustrating the ways transdisciplinary took root as a deeper practice and approach to human learning. Alejandra Frausto, our primary partner at in the CPS Social Science and Civic Engagement department also invited PI Vossoughi to join a PLC for CPS teachers focused on Inquiry to Action projects in the Spring/Summer of 2021. As an outgrowth of our co-design work, this connection created another opportunity to share the insights gained through our project with a wider group of teachers working on similar questions of equity, transdisciplinary learning and authentic collaboration with students.

In partnership with the RRB office, we are also prepared to do workshops or presentations on the work as soon as the report is made public. This would be another great opportunity to involve are participating teachers in sharing the work.

Commitment to Equity

In what ways does this project reflect/challenge/progress the district's commitment to equity?

This project aimed to address several inter-related problems of practice.

First, we know

that curriculum and pedagogy are most effective and equitable when they are meaningfully connected to students' lives and communities, particularly for students underrepresented within STEM fields. While NGSS supports deeper connections to professional practice, the need to develop STEM learners and professionals equipped to wrestle with the complex social and ethical issues of our time is a leading edge of the field. Moving in this direction requires additional skillsets and opportunities for both students and teachers, including how to support thinking and learning at the intersection of science, math and critical civics and literacy.

Supporting teacher development in this area also requires opportunities for co-learning among teachers, and for meaningfully collaborating with students, families and community members to design projects that address local realities and view the disciplines themselves through an equity lens (beyond settled views of disciplinary domains and towards multiple and dynamic ways of knowing [Warren, et. al., 2020]). Efforts to expand and engage student voice also require models of substantive collaboration across teachers and their students, and ways of building with students' perspectives around the design and implementation of academic learning across domains. Finally, supporting such co-design at scale requires that we not only develop and share models of rich curriculum, but that we carefully

Reflect on the district's equity framework as well as the following: As a researcher, what is my privilege / bias when it comes to this question? Am I assuming that Black and brown students will inherently perform poorly? Have I consulted those whose communities I want to research? Is the research designed with the holistic humanity of the people I am researching in mind? Do I perceive the communities I want to research as allies, or as research subjects? Am I interrogating / challenging policies and systems that may be contributing to inequities? Will this project create an undue burden on the communities I am seeking to research?

document and analyze the conditions, processes and outcomes of multiple stakeholders working together to create justice-oriented transdisciplinary learning.

Given these challenges and opportunities, our findings can help inform how district leaders conceptualize and design for student voice in substantive ways, providing insight into the processes that allow for deeper curricular collaboration across teachers, school leaders and students. This might include considering when it is helpful to shift the frame from student voice (which can remain in a binary of teacher v. student led, and sometimes risks engaging with youth in more tokenizing or one-off ways) to one of co-design (see Appendix B for more on this). Similarly, the shift from interdisciplinary to transdisciplinary learning highlights how various domains can not only come together in service of multi-dimensional questions and projects, but how thinking through the ideas and questions of one discipline can recontextualize and deepen learning in another. Here instructional leadership teams could be supported to engage in further co-design, given the existing structure of collaboration amongst teachers and administrators often with the stated goal of working across disciplines. Instructional leadership teams could also support the creative scheduling and organization of course sequences so that teachers might share the same group of students across disciplines, facilitating opportunities for transdisciplinary projects that take shape across multiple courses simultaneously. Though only two of our teams were able to work closely with parents/families given the challenges of Covid-19 and remote learning, their processes reveal the ways co-design that is intentional

about challenging historical hierarchies of knowledge/expertise and creating conditions for trust, relationality and role-remediations (see Appendix A) can support much more substantive models of family engagement (The Family Leadership Design Collaborative provides additional resources for deepening family engagement along these lines).

Finally, while many districts are working to further develop equity principles and deepen approaches to socio-emotional learning, these could be more directly tied to the ways we conceptualize and design for academic or disciplinary learning itself. Our project helps to address this challenge in two ways: 1) by understanding epistemic heterogeneity or multiple ways of knowing as a deep educational imperative that productively disrupts settled views of the disciplines and positions students as dynamic thinkers and contributors to diverse and evolving knowledge systems; and 2) by working to recognize and design for substantive connections between students' academic learning and the knowledge and expertise within their families and communities. Supporting teachers to attune to student thinking and lived experience in ways that expand these intersections is a key implication of the work, one supported by working alongside students to build curriculum in ways that avoid making assumptions or essentializing cultural groups and instead build with their complex experiences, identities, questions and concerns. As schools engage more deeply in the work of critical civics, insights around careful pedagogical approaches that avoid pedagogies of despair and support students' well-being and social imagination also become important, particularly for teacher development in this area. More broadly, co-design offers a way to address process as

well as outcomes in equity work.

Finally, teachers named the experience of co-design as amongst some of the more generative professional development or PLC's they have experienced. Some mid-career teachers described how the experience re-enlivened their practice and convinced them to stay in teaching (particularly during a turbulent time with a significant amount of turn over). This final point speaks to a need for PD that meaningfully supports mid-career teachers at the edges of their practice.

How are your research activities accessible to individuals with disabilities?

We made accommodations as needed to support full participation for all participants. Given that our project occurred during covid-19 and that all meetings were on zoom, this platform also supported wider accessibility.

Are your research activities translated into languages other than English as appropriate for the community?

We did not encounter a need for translation in this particular project however we were prepared to provide translation as needed.

Please use the table below to list all District CPS Supporters and the role they will have in your study. Use the details box to describe your supporters' title and role in the district. List your primary supporter first.

Please click "save" after each line.

CPS Supporter Email Address	CPS Supporter Details
-----------------------------	-----------------------

Link to New Contact Form

User had the option to start a different form here.

How will you share your research findings with the population(s) you are studying?

yes! We are very excited to share a public facing final report/zine that we are parting with a local artist and CPS art teacher to design. The report is currently drafted and going through final revisions with our participating teachers providing their feedback and key suggestions. The report shares key frameworks of co-design, intergenerational learning and transdisciplinary curriculum, followed by tools and resources for co-design as well as discussion of our key findings from the work and a page of recommendations and resources. Our goal is to co-author the report with our teachers, who are very excited to share with their schools and partners throughout the district and beyond. The report draws on our work in Chicago and Evanston but is meant to support teachers across the country who are interested in this type of co-design and community partnership.

The knowledge developed from our project is deeply collaborative and emergent from the many sessions and conversations we held with lead teachers. Accordingly, the report we are developing will ideally be co-authored with our teachers. Co-authorship is important to recognizing the intellectual work that has gone into developing key insights around co-design and equitable transdisciplinary learning.

Specifically, co-authorship would look like including the following on the front page of the report: This report was developed by Shirin Vossoughi, Trinity Collins, Leslie Russell and

Silvia Gonzalez in collaboration with Andrea Anders, Tiffany Childress Price, Anna

Choi, Lindsay Hayden, Michael Meadows, Corey Winchester and TaRhonda Woods.

We would also like to thank Alejandra Frausto, Jessica Marshall and Chris Nho for their contributions to the project.

The naming of teachers within the report however would use pseudonyms. Teachers would only be named as co-authors. In addition there is a page in the report that names each participating high school and the specific projects they developed. Where focus group quotes are used for teachers and students within the report pseudonyms are always used and students' home schools are not named in the context of student quotes.

We feel strongly that having researchers alone author the report would reproduce an erasure of teacher knowledge and contributions. This kind of co-authorship is therefore something we hope to work with CPS to address and support. There are recent histories of districts co-authoring such reports, but perhaps less often do teachers themselves help to co-author research reports. Given the paradigm shifts towards participatory design and research underway in the field, a key issue will be creating thoughtful policies and approaches to such co-authorship with teachers and we are prepared to support these developments more broadly.

Research Activities

Start Date of Recruitment

07/24/2020

End Date of Recruitment

04/15/2021

Please provide the date that you will begin primary data collection

07/24/2020

Please provide the end date of primary data collection

06/15/2021

Please provide the date that you will begin analysis

09/15/2020

Please provide the end date of analysis

02/15/2023

Please provide the approximate date that you will finalize your research report.

05/01/2023

Description of Deliverable/Final Product (i.e., academic/journal article, white paper, memo, report)

See above for the description of the final public facing report. In addition to this report, we are in the process of finalizing a research paper oriented towards scholarly and teacher education audiences about the work of co-design and our findings in the process.

Will any portion of this research, including recruitment or consent, take place during or in any way interfere with standard activities?

No

With very few exceptions, research procedures cannot be carried out during or in any way interfere with standard activities, including instruction time or professional development sessions.

Will this study involve study subject randomization or a control group?

No

Will your research employ study-subject deception or non-disclosure?

No

Will this research involve Product Testing?

No

Will this research involve collection of biological samples or biometric data?

No

Does this research involve other research procedures not described previously?

No

Is this research tied to a standard or novel curriculum, teaching or other program, staff professional development training or program, or other non-research activity or activities?

No

Does this study involve the use of educational technology (including survey tools, video conference platforms, and third party websites. See note for add'l details)?

No

Please be aware that under The Student Online Personal Protection Act, SOPPA (105 ILCS 85/), any platform students interact with must be compliant with current data security and student privacy regulations. Please note that this definition includes online survey tools such as Qualtrics. Please use the following website to check if your proposed platform is complaint with SOPPA: <https://cps.app.learnplatform.com/new/public/tools>

Study Population

Will you be submitting a secondary Data Request?

No

RRB Number

2020-1616-CPS

This is your RRB Number. Please reference this in any data request associated with this study.

Study Subject Inclusion Criteria

see methods sections above -- students and teachers at participating schools were the inclusion criteria.

If the research involves more than one study subject population (e.g. students, parents, teachers, staff), please individually detail the inclusion criteria for each.

Study Subject Exclusion Criteria

n/a

If the research involves more than one study subject population, please individually detail the inclusion criteria for each

Please select all special populations that may be targeted for your study

No answer provided.

Describe the potential direct and/or indirect benefits for all detailed research procedures and populations

see methods, above

Describe the anticipated potential risks, however minimal, associated with the detailed research procedures and subject populations

see methods, above

How will the identified risks for all research procedures and subject populations be minimized and/or mitigated to the greatest extent possible?

see methods, above

What procedures will you use in the event that research questions/processes produce observable stress/distress in subjects?

see methods, above

Will you compensate study subjects?

Yes

Detail the proposed compensation (monetary and/or non-monetary) for each research procedure and population

Students were provided \$25 to participate in a one hour focus group through gift cards. Lead teachers were compensated for their time to support co-design. I attempted to access the secondary employment form but the link was broken here.

Student incentives must be appropriate, equitable, and reasonable in amount. All staff incentives are limited to \$50 or less in a given year. Any amount in excess will require the secondary employment form to be completed by staff participants, or otherwise have the amount allocated to the school.

Describe when and where study subjects will be compensated and detail the mechanisms that will be in place to ensure study subject privacy when distributing compensation.

Students were sent individual gift cards using their email addresses. Teachers were compensated through personal checks administered by Northwestern University.

Describe the compensation schedule for participants that withdraw from the research or that are withdrawn from the research by the study team.

No participants withdrew from the research.

Study Recruitment

Outline every aspect of the recruitment process for students.

see methods, above

Outline every aspect of the recruitment process for teacher participants.

see methods, above

Please attach all recruitment materials not attached elsewhere (Optional).

No answer provided.

Please attach all consent/assent forms associated with this study not already attached elsewhere (Optional).

No answer provided.

Identify study team members who will recruit subjects.

Shirin Vossoughi was the primary research team member who recruited participants. Teachers did recruit students to participate in the co-design from their schools with guidance from the research team in how to select for students with a diverse range of academic and social experiences. These students were then invited to join the focus groups following the co-design process (they opted into focus groups and focus group participation was not required to engage in the co-design groups, especially given focus groups were voluntary and took place months after co-design).

Will this research involve screening procedures

No

Compliance

FERPA

For more information on FERPA, click here.

Is any aspect of this research subject to FERPA?

No

ISSRA

For more information on ISSRA, click here.

Is any aspect of this research subject to ISSRA?

No

PPRA

For more information on PPRA, click here.

Is any aspect of this research subject to PPRA?

No

Permission, Confidentiality, and Security

Attach a draft of the permission letter that will be sent to school Principals

No answer provided.

Please note that Principals have final authority over what happens in their schools.

How will you protect the privacy of prospective research subjects? Please detail how study subject privacy will be protected during recruitment, screening, consent, and all research procedures. Provide an accounting for all applicable research procedures and study populations.

See methods and procedures

Describe the data confidentiality or security provisions that will be in place for all research data.

See methods and procedures

How will you store participant data?

With codes

These details must be included in all applicable consent forms

Describe the coding mechanism, indicate where links to codes will be stored, identify the individuals who will have access to coding keys or links, and clarify if codes will be deleted at a later date.

All data is cleaned and stored with pseudonyms only. There is a password protected PDF within the secure northwestern Resfiles system that holds the key for pseudonyms.

Will you keep participants' contact information on file after the data have been collected?

No

Will you share individual-level data with other researchers or practitioners beyond the designated key research personnel?

No

What will you do with the data once the research has been completed (choose all that apply)?

Retain data for three years or longer post-completion, then destroy it

Please note that the district discourages storing study data for longer than three years after study completion.

Please describe the purpose for which you will be storing data after the conclusion of the study. Also, explain the planned duration (i.e. how long) you will retain data

Qualitative data analysis takes time and sometimes involves years of ongoing analysis (particularly considering publication timelines). In addition, sometimes there are additional papers that are written in future years that draw from particular study data to help pursue additional questions or analyses.

Attachments

Please attach all miscellaneous attachments

No answer provided.

If you are resubmitting your protocol following initial review, please attach your response letter here.

Are there any additional finalized contracts or agreements associated with this research that have not been attached elsewhere as part of this application (e.g. CPS Data Authorization Agreements)?

In case it is helpful for archival purposes, I am attaching the original letters of support from all participating CPS schools and the office of civics education and social sciences.

03/12/2023 • Vossoughi, Shirin • *Not Internal*

Yes

Please attach any contract or agreement associated with this research

Letter of Support_Alejandra Frausto.pdf	Contract/Agreement
Letter of Support_Chicago Vocational.pdf	Contract/Agreement
Letter of Support_Lincoln Park.pdf	Contract/Agreement
Letter of Support_Senn.pdf	Contract/Agreement
Letter of Support_Walter Payton.pdf	Contract/Agreement

Are there any pending (i.e. not yet signed by both parties) contracts or agreements associated with this research that have not been attached elsewhere as part of this application?

No

Acknowledgements

Acknowledgements

Please acknowledge the following:

- ✓ All parts of this submission are accurate, complete, consistent, and clear.
- ✓ I have accurately and completely described all intended human subjects research procedures and the populations with whom they will be carried out.
- ✓ I have attached all study materials, including, but not limited to, all materials that will be given to, sent to, read to, or otherwise used with all prospective study subject populations.
- ✓ This submission adhere to all CPS policies and guidance as outlined in the link below
<https://www.cps.edu/about/district-data/conduct-primary-research/>
- ✓ I have accurately identified all personnel who will be involved in this study.
- ✓ I acknowledge that any/all changes required by the CPS RRB in the course of its review of this submission will be reported to my IRB of record during the entire lifetime of this study.
- ✓ I attest that I will work with my IRB of record to address any concerns raised in the review of this submission.
- ✓ I attest that all of the research procedures detailed in this submission have been carried out with prospective IRB review and approval.
- ✓ I agree to comply with all background check and volunteer procedures required of my study, per the official CPS Volunteer Policy (link provided below):
<https://policy.cps.edu/download.aspx?ID=272>

Submission Date

03/12/2023

Verification of Previously Approved RRB
- Submitted 03/27/2023 12:48 PM ET by Corson, Adam

Office Verification

Ready for processing?

Ready for processing

Verify RRB #

2020-1616-CPS

Please indicate which of the following applies.

Project Currently Exists within IRBManager

Office RRB # Lookup

2020-1616-CPS

Load Initial Submission into IRBManager

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2025.1.7988.0/Release/500632e | GCWAWS1 | 2025-01-17 16:45:14Z

Powered By  IRBManager

Title of Research Study: *Cultivating Expansive Learning at the Intersections of STEAM, Critical Literacies and Civics Education*

Principal Investigator: *Shirin Vossoughi*

Supported By: This research is supported by the School of Education & Social Policy at Northwestern University and the Chicago Public Schools Rapid Impact Grant.

Key Information about this research study:

The following is a short summary to help you decide whether to be a part of this study. Information that is more detailed is explained later on in this form.

- The purpose of this study is learn about the conditions that support meaningful co-design of curriculum and pedagogy at the intersections of STEAM and critical literacies among teachers, students, community members and STEAM professionals. We are also interested in the forms of thinking, learning and action that can emerge at the intersections of these domains.
- You will be asked to have the co-design process documented through audio-recording and fieldnotes, and to participate in a possible follow up interview after the summer institute.
- We expect that you will be in this research study for 1 year, though the project may extend beyond depending on funding and the direction that the group decides to go collectively.
- The primary potential risk of participation is varying levels of discomfort when engaging in conversations as a part of the co-design and reflective interview process.
- The main benefit of being in this study is the opportunity reflect on your experiences in the co-design and summer institute and on the learning you may experience through participation.

Why am I being asked to take part in this research study?

We are asking you to take part in this research study because you are participating in the co-design process within the STEAM + Critical Literacies project.

How many people will be in this study?

We expect about 15-30 people will be in this phase of the research study.

What should I know about participating in a research study?

- Someone will explain the research study to you.
- Whether or not you take part is up to you.
- You can choose not to take part.
- You can agree to take part and later change your mind.
- Your decision will not be held against you.
- You can ask all the questions you want before you decide.
- You do not have to answer any question you do not want to answer.

What happens if I say, “Yes, I want to be in this research”?

If you choose to participate in the study, your participation in the co-design process will be documented through written fieldnotes. You will also have the option of allowing your participation in the co-design process to be audio-recorded (see below). In addition, you may be asked to participate in

a follow up interview after the summer institute asking you about your experiences in the co-design process, and if you are a teacher, the PI may ask if you would consider allowing pilot data collection in your classroom in Fall 2020. The PI (Vossoughi) may also follow up with you about your interview or other aspects of your participation in the co-design as the study findings are written up. There will be opportunities to participate in data analysis and writing should be interested. Any comments or interview reflections that become part of publications will be shared with participants in advance to obtain additional consent.

Will being in this study help me in any way?

We cannot promise any benefits to you or others from your taking part in this research. However, possible benefits include the opportunity to reflect on your experiences in the co-design and summer institute and on the learning you may experience through participation. Data collected through classroom observations may also provide resources for curricular and pedagogical reflection.

Will I be paid or given anything for taking part in this study?

Your time will be covered to participate in the co-design process whether or not you participate in the research. If you do enroll in the study and we conduct a follow up interview, your time will be covered for that interview as well (\$25 for 30-40 minutes). Parking and transportation costs will also be reimbursed.

Is there any way being in this study could be bad for me?

Participants may experience varying levels of discomfort when engaging in conversations as a part of the co-design and reflective interview process. This discomfort may arise, for instance, if participants choose to share sensitive information about themselves that relates to the Institute's activities.

A possible risk for any research is that confidentiality could be compromised – that is, that people outside the study might get hold of confidential study information. We will do everything we can to minimize this risk, as described in more detail later in this form.

What happens if I do not want to be in this research, or I change my mind later?

Participation in research is voluntary. You can decide to participate or not to participate. If you do not want to be in this study or withdraw from the study at any point, your decision will not affect your relationship with Northwestern University or the co-design team.

You can leave the research at any time and it will not be held against you. If you decide to withdraw from this study, any data already collected from you will be destroyed.

How will the researchers protect my information?

Any files pertaining to your participation will use an assigned pseudonym and data will be stored on a secure server through Northwestern.

Who will have access to the information collected during this research study?

Efforts will be made to limit the use and disclosure of your personal information, including research study records, to people who have a need to review this information. We cannot promise complete secrecy.

There are reasons why information about you may be used or seen by other people beyond the research team during or after this study. Examples include:

- University officials, government officials, study funders, auditors, and the Institutional Review Board may need access to the study information to make sure the study is done in a safe and appropriate manner.

How might the information collected in this study be shared in the future?

We will keep the information we collect about you during this research study for study recordkeeping. Your name and other information that can directly identify you will be stored securely and separately from the rest of the research information we collect from you.

De-identified data from this study may be shared with the research community, and with journals in which study results are published. We will remove or code any personal information that could directly identify you before the study data are shared.

Despite these measures, we cannot guarantee anonymity of your personal data.

The results of this study could be shared in articles and presentations, but will not include any information that identifies you unless you give permission for use of information that identifies you in articles and presentations.

Who can I talk to?

If you have questions, concerns, or complaints, you can contact the Principal Investigator [Shirin Vossoughi, 424-298-7573]

This research has been reviewed and approved by an Institutional Review Board (“IRB”) – an IRB is a committee that protects the rights of people who participate in research studies. You may contact the IRB by phone at (312) 503-9338 or by email at irb@northwestern.edu if:

- Your questions, concerns, or complaints are not being answered by the research team.
- You cannot reach the research team.
- You want to talk to someone besides the research team.
- You have questions about your rights as a research participant.
- You want to get information or provide input about this research.

Optional Elements:

The following research activities are optional, meaning that you do not have to agree to them in order to participate in the research study. Please indicate your willingness to participate in these optional activities by placing your initials next to each activity.

I agree I disagree

_____ _____ The researcher may audio-record the collective co-design process. My participation in the co-design process may therefore be audio recorded and used as part of the data record.

Signature for Adult 18 or older

Your signature documents your permission **to take part** in this research.

Signature of participant

Date

Printed name of participant

Signature of person obtaining consent

Date

Printed name of person obtaining consent

Title of Research Study: *Cultivating Expansive Learning at the Intersections of STEAM, Critical Literacies and Civics Education*

Principal Investigator: *Shirin Vossoughi*

Supported By: This research is supported by the School of Education & Social Policy at Northwestern University and the Chicago Public Schools Rapid Impact Grant.

Key Information about this research study:

The following is a short summary of this study to help you decide whether to permit your child to be a part of this study.

The purpose of this study is to document the collaborative development of new curriculum and lessons that bring together science, math, reading and writing in creative and critical ways. We are interested in learning about how students work alongside teachers and community members to imagine and design such curriculum.

Your child will not be asked to do anything different than participate in the STEAM & Critical Literacies summer institute. A member of our research team will observe the institute, take written notes and potentially audio-record the process of curriculum co-design (this will depend on the consent of participants). The observations are not evaluative, they are aimed at learning about what becomes possible through such co-design processes.

We expect that your child will be in this research study for four days.

The primary risk of participation is some potential discomfort of being observed in the co-design process.

The main benefit of participation is learning about educational research and contributing to the improvement of youth-centered curriculum and learning.

We expect about 10 youth will be in this research study.

You can ask all the questions you want before you decide.

If you say that “Yes, you want your child to be in this research,” here is what your child will be asked to do:

The researcher will clearly explain the study to students and let them know that we are interested in documenting the process of co-design amongst students, teachers and community member in the summer institute. Students will also be informed that the primary audience for the research is other teachers and schools. A researcher will take notes and audio record the co-design process (this element is optional, see below). Your child will not be asked to participate any differently than they would regularly within the institute.

Is there any way being in this study could be bad for my child?

Your child may experience some slight discomfort about having their participation observed, though steps will be taken to conduct the observations with little intrusion.

If you say that you do not want your child to be in this research:

Participation in research is voluntary. You can decide you do not want your child to participate in this research and it will not be held against you or your child in any way.

You can say “Yes,” but change your mind later:

You can have your child stop and leave the research at any time and it will not be held against you or your child. If this happens, I will ask you if any data collected from your child up until that point may be used in the research and you will have the space to decide.

This is what will happen to the information collected for this research:

Efforts will be made to limit the use and disclosure of your child’s personal information, including research study records, to people who have a need to review this information. We cannot promise complete secrecy. Organizations that may inspect and copy your information include the IRB and other representatives of this institution. Your child will be assigned a pseudonym and their name or image will never be shown as part of the research.

Here is some other information that is useful for you and your child to know:

Parents please be aware that under the Protection of Pupils Right Act 20 U.S.C. Section 1232 (c)(1)(A), you have the right to review a copy of the questions asked of or materials that will be used with your students. If you would like to do so, you should contact [Shirin Vossoughi, shirin.vossoughi@northwestern.edu or 424 298 7573] to obtain a copy of the questions or materials.]

We will not ask about child abuse, but if your child tells us about child abuse or neglect, we are legally obligated to report it to state authorities.

Here is who you and your child can talk to:

If you have questions, concerns, or complaints, you can talk to the Principal Investigator [Shirin Vossoughi, shirin.vossoughi@northwestern.edu or 424 298 7573]. This research has been reviewed and approved by an Institutional Review Board (“IRB”). You may talk to them at (312) 503-9338 or irb@northwestern.edu if:

- Your questions, concerns, or complaints are not being answered by the research team.
- You cannot reach the research team.
- You want to talk to someone besides the research team.
- You have questions about your rights as a research participant.
- You want to get information or provide input about this research.

Optional Elements:

The following research activities are optional, meaning that you do not have to agree to them in order to allow your child to participate in the research study. Please indicate your willingness to have your child participate in these optional activities by placing your initials next to each activity.

I agree I disagree

<p>_____</p>	<p>The researcher may audio-record the collective co-design process. My child’s participation in the co-design process may therefore be audio recorded and used as part of the data record.</p>
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Your signature documents your permission for the named child to take part in this research.

Printed name of parent ☐ or individual legally authorized ☐
to consent for the child to participate

Date

Signature of parent ☐ or individual legally authorized ☐
to consent for the child to participate

Date

If signature of second parent not obtained, indicate why: (select one)

☒ The IRB determined that the permission of one parent is sufficient.

☐ Second parent is: ☐ deceased ☐ unknown ☐ incompetent ☐ not reasonably available

☐ Only one parent has legal responsibility for the care and custody of the child

Title of Research Study: *Cultivating Expansive Learning at the Intersections of STEAM, Critical Literacies and Civics Education*

Principal Investigator: *Shirin Vossoughi*

Supported By: This research is supported by the School of Education & Social Policy at Northwestern University and the Chicago Public Schools Rapid Impact Grant.

Key Information about this research study:

The following is a short summary of this study to help you decide whether to permit your child to be a part of this study.

The purpose of this study is to document new curriculum and lessons that bring together science, math, reading and writing in creative and critical ways. We are interested in learning about how students engage with these lessons within the classroom, and what kinds of thinking and learning emerge. Your child will not be asked to do anything different than participate in class regularly. A member of our research team will observe the classes and take written notes about teaching and learning within the new lessons. The observations are not evaluative, they are aimed at learning about what becomes possible through new forms of interdisciplinary curriculum.

We expect that your child will be in this research study for three weeks.

The primary risk of participation is some potential discomfort of being observed in class.

The main benefit of participation is learning about educational research and contributing to the improvement of youth-centered curriculum and learning.

We expect about 150 children will be in this research study.

You can ask all the questions you want before you decide.

If you say that “Yes, you want your child to be in this research,” here is what your child will be asked to do:

The researcher will clearly explain the study to students and let them know that their feedback on the lessons/curriculum will help to improve them for future students. Students will also be informed that the primary audience for the research is other teachers and schools. A researcher will be in the classroom during the lesson taking notes on a laptop about how the lesson unfolds. Your child will not be asked to participate any differently than they would regularly within the classroom.

Is there any way being in this study could be bad for my child?

Your child may experience some slight discomfort about having their classroom observed, though steps will be taken to conduct the observations with little intrusion.

If you say that you do not want your child to be in this research:

Participation in research is voluntary. You can decide you do not want your child to participate in this research and it will not be held against you or your child in any way.

You can say “Yes,” but change your mind later:

You can have your child stop and leave the research at any time and it will not be held against you or your child. If this happens, I will ask you if any data collected from your child up until that point may be used in the research and you will have the space to decide.

This is what will happen to the information collected for this research:

Efforts will be made to limit the use and disclosure of your child's personal information, including research study records, to people who have a need to review this information. We cannot promise complete secrecy. Organizations that may inspect and copy your information include the IRB and other representatives of this institution. Your child will be assigned a pseudonym and their name or image will never be shown as part of the research.

Here is some other information that is useful for you and your child to know:

Parents please be aware that under the Protection of Pupils Right Act 20 U.S.C. Section 1232 (c)(1)(A), you have the right to review a copy of the questions asked of or materials that will be used with your students. If you would like to do so, you should contact [Shirin Vossoughi, shirin.vossoughi@northwestern.edu or 424 298 7573] to obtain a copy of the questions or materials.]

We will not ask about child abuse, but if your child tells us about child abuse or neglect, we are legally obligated to report it to state authorities.

Here is who you and your child can talk to:

If you have questions, concerns, or complaints, you can talk to the Principal Investigator [Shirin Vossoughi, shirin.vossoughi@northwestern.edu or 424 298 7573]. This research has been reviewed and approved by an Institutional Review Board ("IRB"). You may talk to them at (312) 503-9338 or irb@northwestern.edu if:

- Your questions, concerns, or complaints are not being answered by the research team.
- You cannot reach the research team.
- You want to talk to someone besides the research team.
- You have questions about your rights as a research participant.
- You want to get information or provide input about this research.

Your signature documents your permission for the named child to take part in this research.

Printed name of parent [] or individual legally authorized []
to consent for the child to participate

Date

Signature of parent [] or individual legally authorized []
to consent for the child to participate

Date

If signature of second parent not obtained, indicate why: (select one)

- [X] The IRB determined that the permission of one parent is sufficient.
- [] Second parent is: [] deceased [] unknown [] incompetent [] not reasonably available
- [] Only one parent has legal responsibility for the care and custody of the child

NORTHWESTERN UNIVERSITY

Assent to Participate in Research

Title of Research Study: *Cultivating Expansive Learning at the Intersections of STEAM, Critical Literacies and Civics Education*

Principal Investigator: Shirin Vossoughi.

Sponsor: This research is supported by the School of Education & Social Policy at Northwestern University and the Chicago Public Schools Rapid Impact Grant

Why am I being asked to take part in this research study?

A research study is usually done to find a better way to treat people or to understand how things work. You are being asked to take part in this research study because you are a high school student who will be participating in the co-design of new curriculum during the summer institute. I am studying the collaborative process through which this curriculum is developed.

What should I know about a research study?

In this study, I want to find out more about how students, teachers and community member can work together to design curriculum and teaching that mixes science and math with critical reading and writing. You do not have to be in this study if you do not want to do so. It is up to you if you want to participate. You can participate in the summer institute without participating in the research piece. You can choose not to take part in the research now and change your mind later if you want. Your decision will not be held against you. You can ask all the questions you want before you decide.

How long will the research last?

I expect that you will be in this research study for four days.

What happens if I say “Yes, I want to be in this research”?

If you agree to join this study, you will be asked to participate in the institute as you would regularly. I or a member of my research team will take written notes on a lap-top and potentially audio record the co-design process. These notes/recordings are not judging your participation, they are recording how the co-design process unfolds.

Is there any way being in this study could be bad for me?

There is nothing bad that will happen to you, though it may feel uncomfortable to have your participation recorded by a researcher.

What happens to the information collected for the research?

Efforts will be made to limit the use of your personal information, including research study records, to people who have a need to review this information. We cannot promise complete secrecy but we will work to keep your name and other information private. You will be assigned a pseudonym and your real name will never be used as part of the research.

Who can I talk to?

If you have questions, concerns, or complaints, about the research, you can talk to your parents or you can talk to the research team at [Shirin Vossoughi, shirin.vossoughi@northwestern.edu, 424 298 7573] This research has been reviewed and approved by an Institutional Review Board (“IRB”). You may talk to them at (312) 503-9338 or irb@northwestern.edu if: your questions, concerns, or complaints are not being answered by the research team; you want to talk to someone besides the research team; or you have questions about your rights as a research participant.

Optional Elements:

The following research activities are optional, meaning that you do not have to agree to them in order to participate in the research study. Please indicate your willingness to participate in these optional activities by placing your initials next to each activity.

I agree I disagree

_____ _____ The researcher may audio-record the collective co-design process. My participation in the co-design process may therefore be audio recorded and used as part of the data record.

Signature Block for Student Assent

Signature of Student

Date

Printed name of Student

Printed name of person obtaining assent

Date

Signature of person obtaining assent

NORTHWESTERN UNIVERSITY

Assent to Participate in Research

Title of Research Study: *Cultivating Expansive Learning at the Intersections of STEAM, Critical Literacies and Civics Education*

Principal Investigator: Shirin Vossoughi.

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Why am I being asked to take part in this research study?

A research study is usually done to find a better way to treat people or to understand how things work. You are being asked to take part in this research study because you are a high school student in a classroom that will be trying out new curriculum. I am studying the kinds of learning this curriculum can support.

What should I know about a research study?

In this study, I want to find out more about how curriculum and teaching that mixes science and math with critical reading and writing can support students' learning. You do not have to be in this study if you do not want to do so. It is up to you if you want to participate. You can choose not to take part now and change your mind later if you want. Your decision will not be held against you. You can ask all the questions you want before you decide.

How long will the research last?

I expect that you will be in this research study for three weeks.

What happens if I say "Yes, I want to be in this research"?

If you agree to join this study, you will be asked to participate in your classroom as usual. I or a member of my research team will observe your class and take written notes on a lap-top. These notes are not judging you or your teacher, they are just recording how teaching and learning happens with the new curriculum.

Is there any way being in this study could be bad for me?

There is nothing bad that will happen to you, though it may feel uncomfortable to have your class observed by a researcher.

What happens to the information collected for the research?

Efforts will be made to limit the use of your personal information, including research study records, to people who have a need to review this information. We cannot promise complete secrecy but we will

work to keep your name and other information private. You will be assigned a pseudonym and your real name will never be used as part of the research.

Who can I talk to?

If you have questions, concerns, or complaints, about the research, you can talk to your parents or you can talk to the research team at [Shirin Vossoughi, shirin.vossoughi@northwestern.edu, 424 298 7573] This research has been reviewed and approved by an Institutional Review Board (“IRB”). You may talk to them at (312) 503-9338 or irb@northwestern.edu if: your questions, concerns, or complaints are not being answered by the research team; you want to talk to someone besides the research team; or you have questions about your rights as a research participant.

Signature Block for Student Assent

Signature of Student

Date

Printed name of Student

Printed name of person obtaining assent

Date

Signature of person obtaining assent

Focus Group Protocol STUDENTS

Before starting the focus groups, we will revisit the goals of the project and documentation. We will let participants know that they can share only what they feel comfortable sharing about their experience (positive or not), and that they should feel free to take time before answering the questions and ask any clarifying questions along the way. We will also let them know that they can stop the recorder at any point in the process.

1. Take a moment to think back to the summer and when your teacher first approached you about joining the co-design process. What do you recall about your initial impression of the work before it started?
2. Did this first impression align with how you experienced the co-design process, or were there ways in which it diverged? How would you define or describe co-design as an approach?
3. What stands out to you as key moments in the co-design process that you feel like were meaningful in some way?
4. What if anything felt new about this way of engaging with school and your teachers? What felt familiar to you?
5. If and how did participating in the co-design process open up new ways of thinking about education for you?
6. If and how did participating in the co-design process open up new ways of thinking about academic areas like science, math, English, history, etc.?
7. What do you think is or could be valuable about having students work with teachers to design teaching and curriculum? From your perspective, what are some tensions that can come up in this process that we should pay attention to as we continue this work? Do you think co-design with teachers in this way is something we should be doing regularly? What conditions would have to shift to support this?
8. Considering the typical power dynamics between students and teachers, how did you experience the effort to move away from that in the co-design process? Are there ways we could get better at shifting those dynamics?
9. If and how did the digital space make this more challenging? Are there aspects of the digital space that were helpful?
10. Are there ways in which the co-design process shifted how you see your experience at school during the Fall term? In other words, are there any ways that you notice yourself engaging differently in school or with your teachers based on your experience in the co-design?
11. What role do you think parents/caregivers and community members could play in the co-design process?
12. Is there anything else about the experience that you feel is important to share that we haven't talked about yet?

Thank you so much for participating in this focus group and sharing your reflections with us.

Interview Protocol for Participating Teachers

[Before starting the interview, we will revisit the goals of the project and documentation. We will let interviewees know that they can share only what they feel comfortable sharing about their experience (positive or not), and that they should feel free to take time before answering the questions and ask any clarifying questions along the way. We will also let them know that they can stop the recorder at any point in the process.]

The following offers an outline of the questions we will be asking:

1. How did you get involved in the STEAM + Critical Literacies Co-design?
2. Can you share a bit about your history working in these disciplinary domains, and (if relevant) efforts to bring them together?
 - a. How would you describe your vision for critical interdisciplinary learning prior to joining the project?
3. What were your first impressions about the co-design space and project?
4. What kept you coming back to work with the group on curriculum and pedagogy?
5. Are there particular moments that stand out to you about your experience in the project, either because they were particularly impactful, or because they were complex or challenging?
 - a. Are there Ah-ha moments that you had along the way that you feel are important for teachers in the field?
6. What do you think supported the co-design process to work well? What could we improve on?
7. Are there particular relationships that you have found to be important within this space?
8. How would you describe your current vision for critical interdisciplinary learning?
9. Relatedly, what are some things you are excited to try with your students?
10. What do you see as the future of this project?

Study Title: Cultivating Expansive Learning at the Intersections of STEAM, Critical Literacies and Civics Education

RECRUITMENT SCRIPTS

Addressing teachers, community members & STEM professionals:

Hello, my name is Shirin Vossoughi. I am a professor at Northwestern University in the School of Education and Social Policy. As you know, we have started a process of co-design where teachers collaborate with one another and with community members and STEAM professionals to develop curriculum and pedagogy that bring together STEAM learning and critical literacies. I want to take this time to explain our research study and give you the opportunity to decide if you would like to participate in the study. Our study is called “Cultivating Expansive Learning at the Intersections of STEAM, Critical Literacies and Civics Education.” All those engaging in the co-design process are eligible to participate.

We decided to document the co-design process through research in order to better understand the conditions that support generative co-design and the kinds of thinking, reflection and pedagogical action teachers are developing within this project. One of our central goals is to carefully document and share the co-design practices that support the development of deep learning at the intersections of STEAM, critical literacies and civics education. We are also interested in sharing what we learn from the process of co-design for others who may wish to engage in this type of collaborative work.

So that’s a bit about the goals of the research. It is also important to say that you do not have to participate in the research in order to participate in the co-design. If you do decide to participate in the research component, it means that your work in the co-design process will be documented by the research team. Forms of documentation will include written field observations and (possibly) audio recordings of key activities. As reflected in the consent forms, audio recording of the co-design process is optional. Care will be taken to document the process in ways that feel organic rather than intrusive. Participants in the study will also be invited to participate in follow-up interviews. Follow-up interviews will involve asking open-ended, reflective questions about your experiences in the co-design. Follow-up interviews will last approximately 30-40 minutes and your time will be covered should you choose to participate.

We have provided you each with a consent form that contains additional information about how we will protect your privacy and about any foreseeable risks you may face should you participate in this study. We are also happy to answer any and all questions you might have. As stated in the forms, if you consent to participation in this study, you can withdraw from the study at any time without facing any consequences. It is also important to note that we cannot guarantee full privacy given the small risk of breach in the data. As stated, participation in the research is not required. You may, at any point, ask any questions about the study. The consent

forms contain my contact information and you may reach out to me at any point to share your questions and concerns.

Addressing students in Group 1 (see Appendix A) – those who are participating in the summer institute as co-designers:

Hello, my name is Shirin Vossoughi. I am a professor at Northwestern University in the School of Education and Social Policy. We are excited to have you participate in the co-design process during the institute this summer. The goals of this institute are to bring teachers, students, family and community members together to imagine and create new kinds of curriculum and teaching that mix science, technology, math, engineering, art, reading and writing in order to help students analyze and work to address issues they see as important in their communities. . The lessons you help develop in the summer will become a part of your teacher's class next year.

As a researcher, I will also be documenting the summer institute in order to learn from the process of co-design. I want to take this time to explain the research piece and give you the opportunity to decide if you would like to participate in this part of the institute. All those engaging in the co-design process are eligible to participate in the research, but it is really important to note that you don't have to be part of the research in order to be part of the summer institute.

We decided to document the co-design process through research in order to better understand how students, teachers, family and community members can meaningfully work together to build curriculum, something that does not happen often in schools. We think that studying this process will be useful for other teachers and schools who would like to develop curriculum in more community and youth centered ways. So the main audience for the research is other teachers and schools.

So that's a bit about the goals of the research. It is also important to say that you do not have to participate in the research in order to participate in the co-design. If you do decide to participate in the research component, it means that your work in the co-design process will be documented by the research team. Forms of documentation will include written field observations (where researchers take notes on what people say and do) and possible audio recordings of key activities. As reflected in the consent forms, audio recording of the co-design process is optional. Care will be taken to document the process in ways that feel natural rather than intrusive. We are not judging or evaluating anyone's participation in the co-design. We are genuinely interested in learning from your experience.

We have provided you each with an assent form that contains additional information about how we will protect your privacy and about any foreseeable risks you may face should you participate in this study. (Here we will go over the assent form) If you would like to participate in the research, we will also ask for your parent or guardian to consent. (Here we will go over the parent consent form with students) We are also happy to answer any and all questions you

might have. It is also important to note that we cannot guarantee full privacy given the small risk of breach in the data. As stated in the forms, if you consent to participation in this study, you can withdraw from the study at any time without facing any consequences. You may, at any point, ask any questions about the study. The assent/consent forms contain my contact information and you may reach out to me at any point to share your questions and concerns.

Addressing students in Group 2 (see Appendix A) – those who are enrolled in teachers' classes who elect to participate in the classroom-level documentation (Fall 2020):

Hello, my name is Shirin Vossoughi. I am a professor at Northwestern University in the School of Education and Social Policy. For the last 6 months I have been working closely with a group of teachers in Chicago and Evanston to imagine and build new curriculum. This curriculum brings together science, technology, math, engineering, art, reading and writing in order to help students analyze and work to address issues they see as important in their communities. In a few weeks, your teacher will be doing some of the lessons that were developed in this process, and with some of the students at your school who helped in creating the lessons and curriculum.

As an educational researcher, part of my job is to document the process of trying out these new lessons so that we can see what works well and what could be improved. We're especially interested in studying how the teachers do these new lessons, how students participate in the activities, and the kinds of thinking and learning that emerge in the process.

All those in the class are eligible to participate in the research, but it is really important to note that you don't have to be part of the research. We think that studying this process will be useful for other teachers and schools who would like to develop curriculum in more community and youth centered ways, and for the broader field and educational system so that we can make arguments for creative teaching and learning in science, math, literacy and other subject areas. So the main audience for the research is other teachers and schools who would like to try similar lessons and forms of teaching and learning.

So that's a bit about the goals of the research. It is also important to say that you do not have to participate in the research in order to participate in the lessons. If you do decide to participate in the research component, it means that your participation in class may be documented by the research team. I or my student will be observing and taking written notes on what the teacher says and does and what students say and do. We are not judging or evaluating anyone's participation. We are genuinely interested in learning from the ways you respond to the lessons and curriculum as it will help us make them better in the future. Forms of documentation will include written field observations (where researchers take notes on what people say and do). Care will be taken to document the process in ways that feel natural rather than intrusive.

If you decide to participate in the co-design process but not the research, talk and participation will not be included as part of the data set for analysis. We will take care to ensure that your participation is fully excluded from what we write down and analyze.

We have provided you each with an assent form that contains additional information about how we will protect your privacy and about any foreseeable risks you may face should you participate in this study. (Here we will go over the assent form) If you would like to participate in the research, we will also ask for your parent or guardian to consent. (Here we will go over the parent consent form with students) We are also happy to answer any and all questions you might have. As stated in the forms, if you consent to participation in this study, you can withdraw from the study at any time without facing any consequences. You may, at any point, ask any questions about the study. The assent/consent forms contain my contact information and you may reach out to me at any point to share your questions and concerns.

APPROVAL OF MODIFICATION

DATE: May 18, 2022

TO: Dr. Shirin Vossoughi
FROM: Office of the IRB

DETERMINATION DATE: 5/18/2022

APPROVAL DATE: 5/18/2022

EXPIRATION DATE:

The Northwestern University IRB has reviewed and approved the submission described below:

Type of Submission:	Modification
Review Level:	Expedited
Expedited Category:	- (7) Behavioral research/social science methods
Title of Study:	Cultivating Expansive Learning at the Intersections of STEAM, Critical Literacies and Civics Education
Principal Investigator:	Dr. Shirin Vossoughi
IRB ID:	STU00211965-MOD0008
Funding Source:	Name: Arie and Ida Crown Memorial, Funding Source ID: SP0053030; Name: Spencer Foundation, Funding Source ID: SP0055878; Name: Steans Family Foundation, Funding Source ID: SP0059071
IND, IDE, or HDE:	None
Documents Reviewed:	None
Special Determinations:	Children;
Unaffiliated External Site(s) that rely on NU IRB:	None
Clinical Trial:	No

This modification adds the CPS Rapid Impact Grant as a funding source.

In conducting this study, you are required to follow the requirements listed in the Northwestern University (NU) Investigator Manual (HRP-103), which can be found by navigating to the IRB Library within the eIRB+ system.

NU IRB approval does not constitute or guarantee institutional approval and/or support. Investigators and study team members must comply with all applicable federal, state, and local laws, as well as NU Policies and Procedures, which may include obtaining approval for your research activities from other individuals or entities.

For IRB-related questions, please consult the NU IRB website at <http://irb.northwestern.edu>. For general research questions, please consult the NU Office for Research website at www.research.northwestern.edu.

STUDY TITLE:

Cultivating Expansive Learning at the Intersections of STEAM, Critical Literacies and Civics Education

PRINCIPAL INVESTIGATOR:

Name: Shirin Vossoughi

Department: School of Education and Social Policy

VERSION DATE:

~~July 21~~ November 2, 2020

Check any **applicable** boxes in the table below – you will be asked for further detail on these topics later in the protocol form:

Indicate Vulnerable Population(s) to be Enrolled	<input checked="" type="checkbox"/> Children (you must complete Appendix A in addition to this protocol document if you plan to enroll children) <input type="checkbox"/> Cognitively Impaired Adults <input type="checkbox"/> Pregnant Women (IF the research activities will affect the pregnancy or the fetus) <input type="checkbox"/> Prisoners (or other detained/paroled individuals)
International Research (check this box if you will collect data from individuals located outside the United States)	<input type="checkbox"/>
Research involving external collaborators (some research activities will be carried out by individuals not employed by Northwestern or NU affiliates)	<input type="checkbox"/>
Research has U.S. Federal government funding via direct award or a sub-award (e.g., NIH, NSF, other federal agencies or departments)	<input type="checkbox"/>

1.0 Purpose and rationale of the study:

Project Purpose

This research study seeks to document, analyze and support an emerging partnership with CPS (Chicago Public Schools) and ETHS (Evanston Township High School) high school teachers working towards critical interdisciplinary learning. The broader vision for this research advances the co-design, implementation, documentation, and sharing of curricular and pedagogical models that support expansive learning at the intersections of STEAM (science, technology, engineering, arts and math), critical social analysis, reading and writing. This vision seeks to address the field-wide need to: 1) expand critical civics learning across disciplinary domains; 2) design for robust forms of literacy learning within STEAM projects that support young people to analyze and transform the social issues they see as pressing within their communities; and 3) carefully document and share the pedagogical practices that support deep learning at the intersections of STEAM, critical literacies and civics education.

The core group of teachers with whom we are working have a shared commitment to developing expansive learning experiences that leverage multiple disciplinary tools and perspectives (scientific and mathematical concepts and practices, critical texts and written genres, social scientific inquiry, etc.), supporting high school students to analyze and address the social issues that impact their everyday lives, and supporting teachers invested in similar visions within and beyond their schools.

Phases of Research and IRB approval

The initial phase of our project (**for which we are seeking IRB approval**) will involve two-three co-design sessions with CPS and ETHS teachers (Spring 2020) that generate a model of critical inter-disciplinary learning, and support teachers to begin sharing and offering feedback on curriculum with one another. Phase 1 will also involve a 4-day Design Institute (Summer 2020) aimed at supporting teachers' collective historical and community-based study of topics that can inform evolving projects and curriculum. During the institute, teachers will develop curriculum and pedagogy in collaboration with an advisory board comprised of students, family and community members, justice-oriented STEAM professionals and learning scientists. ETHS teachers will work with students, parents/caregivers and community members. CPS teachers will work solely with students for the Summer 2020 phase. As explained below, this is due to distinct policies with regard to virtual volunteering. The summer institute will also create time to co-develop the next phases of the project. Finally, due to changes in the CPS RRB policies during Covid-19 and remote learning, Phase 1 will not involve pilot data collection at the classroom level in Fall 2020/Winter 2021. Instead, we will conduct 1 focus group with students at each participating school. As elaborated below, these will be the same students who participated in the summer institute/co-design and the goal of the focus group will be to learn about their experiences co-designing curriculum with

~~their teachers and with one another. Each of the teachers who enroll in the study will select a unit or set of lessons (likely developed during the Summer 2020 institute) for our research team to observe and document through qualitative fieldnotes over a 2-3 week period in their classroom.~~

Our next phases **(for which we will seek IRB approval through modifications at a later date)** tentatively include: 1) a 2021 Summer Institute that brings together teachers and students from participating high schools to experience and iterate curriculum and projects together; 2) more extensive implementation and qualitative documentation of critical interdisciplinary curriculum and pedagogy at the school level; and 3) opportunities for teachers to co-analyze data collected from their classrooms and co-author analyses and writing for scholarly, district-level and teacher audiences.

Scholarly Background and Questions

The last decade has seen a rise in educational research and design that conceptualizes equity in STEAM as tied to a critical widening of the disciplines and professions themselves, whether in science (Medin and Bang 2014; Morales-Doyle, 2017); making and computer science (Vossoughi, Hooper, and Escudé 2016; Pinkard et al. 2017;); engineering (Philip et al. 2018) or mathematics (Gutiérrez 2017; Gutstein 2012; Nasir 2002). Rather than treating STEAM knowledge and practices as settled (Bang et al. 2012), this body of work crucially asks: Which histories and ways of knowing are valued or erased? And, STEAM for what purposes? (Sengupta-Irving & Vossoughi, 2019). These questions align with the broader imperative to support students to engage deeply with disciplinary domains in ways that are rooted in rather than separate from their histories and communities.

Though these contributions and the many educational projects that resonate with them have expanded the meanings and purposes of STEAM learning, less often does the literature address the role of critical reading and writing within such expanded visions for STEAM. In practice, there are a growing number of STEAM teachers who aim to develop curriculum and pedagogy that is socially and culturally relevant, but who may not feel equipped to facilitate the kinds of social analytic inquiry and civic dialogue that such work requires. Our own prior research interviewing STEAM professionals with a social justice orientation has revealed that many name particular social scientific texts as pivotal to their own thinking and work regarding social problems such as waste-water treatment or environmental racism. This is also a challenge at the university level, where science or engineering students who are interested in social, political and ethical questions may have little room to take courses in the social sciences, or Ethnic Studies. In line with the emergent CPS equity framework, discovering and cultivating the unique gifts, talents and interests of every young person requires a view of STEAM disciplines as not only *open to* students' real interests and concerns, but as heterogeneous and evolving domains of knowledge that require the intellectual and cultural ways of knowing of diverse communities. From this perspective, holistic learning and identity

development and deep academic engagement are closely intertwined (Nasir, et. al., 2006).

This project aims to address these gaps by working closely with teachers to co-design, implement and document curriculum and pedagogy that meaningfully integrates STEAM learning with critical literacies. To this end, we ask: **What forms of thinking, learning and action can emerge at the intersections of these domains? How can we best support teachers to design, implement and reflect on such learning?**

Our initial phase, **for which we are seeking IRB approval**, responds to these questions using a participatory design methodology (Bang & Vossoughi, 2016). This approach treats teachers as co-designers of academically rigorous and equitable learning, and understands *processes of partnering* as key foci of documentation. We will therefore draw on qualitative methodologies of data collection (fieldnotes, audio recordings and interviews) to document the process of co-design during the Spring and Summer of 2020. Audio-recording the co-design sessions is important for capturing the nuances of talk-and-interaction that emerge through the processes of partnering across researchers and educators. It is also important since the PI will be directly facilitating the meetings and unable to take active fieldnotes during the co-design sessions. **As discussed below, audio recording as a form of data collection in this study will depend on whether all participants consent to being recorded. If they do not, we will move forward with fieldnotes as the primary mode of documentation for the design process, and will not audio record the meetings or summer institute.** This documentation will allow us to respond to our research questions by tracing the genesis of rich models for conceptualizing critical interdisciplinary learning as well as the development of specific curricular and pedagogical approaches. We are particularly interested in understanding the conditions that support meaningful co-design among teachers, students, family and community members, and learning scientists during the summer institute. Here it is important to note that the core group of teachers named above bring a wealth of experience with critical forms of STEAM, Social Science and English teaching, and are eager to collectively deepen their practice and offer resources for the field. This strand of work also seeks to articulate the method of co-design across key stakeholders, and offers key insights into democratizing decision-making around curriculum and pedagogy, as well as supporting teacher learning and leadership development.

Since we are ultimately interested in what these experiences with critical interdisciplinarity mean for student engagement, learning and sustenance within STEAM fields, our Fall 2020/Winter 2021 pilot data collection will also **include field observations (qualitative fieldnotes) at the classroom level focus groups with students.** This data will be used for ongoing collective reflection and serve as a basis for subsequent phases of the work, when more extensive documentation of student learning trajectories are possible. Our first phase initiates this path through close attention to teacher learning and co-design, **and student reflections on the co-design process. and preliminary views into classroom practice.**

2.0 Enrollment Criteria (who can be in your study and who would not be eligible to participate in your study):

During Summer 2020, this project will include all teachers, students, community members and STEAM professionals who participate in the co-design process at ETHS. For CPS, the Summer 2020 aspects of the project will only include teachers during the co-design phase, ~~and will continue as previously approved for the Fall/Winter data collection phase (teachers and students) pending approval from CPS RRB and student focus groups in Fall 2020/Winter 2021~~. Everyone who is currently part of the project is aware that we are in the process of gaining IRB approval and that they will in the near future have the choice of whether to enroll in the research component of the project or not. This transparency is central to participatory design research methods. When new teachers or participants are approached to join the project, both the co-design and the (pending) research component are described, though it is clearly stated that the research is not required to participate in the project and will be explained in detail at a later date with the choice of enrolling or not in the research component. To be included in the research project, participants must give written consent, and youth under 18 must provide both assent and parent consent. The co-design process will include around 12-20 teachers and 8-10 advisory board members comprised of family/community members, students and STEAM professionals. This includes, for example, a librarian from the Chicago Public Library who does youth programming and has signed on to join the design process. **All participants will be clearly informed that their participation in the co-design meetings and summer institute is not at all contingent on their participation in the research.** People can fully participate in the co-design without electing to participate in the research. They will also be clearly informed that we will be recording the co-design sessions but will not include their talk or participation as part of the documentation/research if they elect not to enroll in the research study (see attached recruitment script).

Similarly, all students ~~within teachers' classrooms during the Fall 2020/Winter 2021 pilot data collection phase who participated in the summer co-design sessions at the CPS schools (20-25 total)~~ will be eligible to enroll in the study based on their assent and parental consent. Those students who do not enroll in the study will not be ~~documented as part of the qualitative fieldnotes developed through classroom observations included in the upcoming focus group sessions~~.

3.0 Sample Size:

The sample will include those who elect to participate in the study from the larger group of teachers, students, community members, STEAM and literacy professionals named above. The entire group is included in the potential sample in order to see how all who experience the co-design engage and develop throughout the process, and to document

the experiences, learning and thinking of students within teacher's classrooms. Assuming that some enroll in the study and others elect not to enroll, we will address our research questions by analyzing the co-design practices and relations that shape the project as a whole and the pedagogies/curriculum implemented in teacher's classrooms alongside tracing the trajectories and growth of teachers and students who do enroll the reflections of those students who do elect to participate in the focus group. Since this is a qualitative or ethnographic study, we are not aiming for generalization and therefore do not select a representative sample of teachers, students and participants from within the group.

4.0 Recruitment and Screening Methods:

Participants will be recruited from the teachers, students, community members and STEAM professionals who will be taking part in the co-design process (ETHS), from the teachers and students who ~~will be participating~~participated in the design process in Summer 2020 from CPS, ~~and those students within participating teacher's classrooms (Fall/Winter 2020)~~. Recruitment will take place at the co-design meetings in the Spring (located at the downtown Northwestern Campus in Abbot Hall or in Annenberg Hall at the Evanston Campus), at the start of the 4-day summer institute, since new participants will join at that point (located at Abbott Hall and possibly a library downtown), and within teacher's classrooms in the Fall of 2020. No screening methods are required since study enrollment is open to anyone who is participating in the project. Recruitment of CPS students for focus groups will take place over email. CPS students have already been in communication with PI Vossoughi over email as part of the larger co-design process and to receive their stipends for participation in the summer design work. These stipends have already been processed so there is no risk that students will feel coerced to participated in the focus group in order to receive their stipends for the co-design work over the summer. (They will receive a separate \$25 gift card for participating in the focus group). The attached recruitment email will be sent to CPS students in order to explain the study and their voluntary participation in the focus group.

Once we receive IRB approval, we will clearly explain the study and the consent process to participants at the outset of the next design meeting, and subsequently at the outset of the summer institute and a few weeks prior to documentation in each teacher's classroom in the Fall. The specifics of the consent process are outlined in section 11, below.

As reflected in the attached recruitment script, participants will be informed about the purposes of the study as well as any risks and benefits. Participants will be informed that participation in the research is completely voluntary and is not required in order to participate in the co-design process or in the classroom level curriculum, and that they can reach out to the study team at any point to ask questions.

It is also important to note that our discussion of the research component will serve as an opportunity for participants to shape the evolution of the research. For example, we will develop group agreements around audio recording and fieldnote writing that are respectful and non-intrusive for the co-design process, including participants' rights to turn off the recording at any point. Similar steps will be taken with fieldnote documentation at the classroom level [no audio recording will take place at the classroom level in this phase of the work. In the future if audio/video recording is requested for classroom level data we will submit a modification]. We plan to revisit the research process regularly to ensure ethical implementation of all components.

5.0 Research Locations:

The co-design and research process will primarily take place on Northwestern University Campuses. Our prior design meeting was held at the downtown Northwestern SESP (School of Education & Social Policy) location. Subsequent design meetings will also be held there, and our summer institute will likely be held either at the Evanston campus or the downtown location. Teachers have expressed an interest in having time to do research, so the summer institute may also involve time at the library. A second set of research locations will be the classrooms of enrolled teachers at CPS and ETHS who elect to participate in classroom-level data collection.

Due to the COVID-19 Pandemic and social distancing, the Summer 2020 institute will take place remotely and will consist of a series of co-design meetings from July-August 2020. This is also the case for the CPS focus group in Fall 2020/Winter 2021. Here it is important to note that google classroom rather than zoom will be used for the focus group sessions per CPS stipulations for remote learning. Also, one of the participating teachers from each CPS team will be present for the duration of the focus group, per CPS RRB requirements. We discuss both the affordances and any constraints this raises below.

The co-design meetings with ETHS teachers, students, parents and caregivers will take place over zoom. The co-design meetings between CPS teachers and students will be held on google classroom and will not be directly observed/documented as part of the research. The weekly focus groups meetings with CPS teachers and PI Vossoughi will be held over zoom. Section 11, below, includes details about how consent will take place.

6.0 Multi-site Research (research that involves external collaborating institutions and individuals):

N/A

7.0 International Research (where data collection will occur outside the United States and U.S. territories, including online activities)

N/A

8.0 Procedures Involved:

Please check the boxes for all applicable data collection procedures you plan to use:

- ☒ One-on-one interviews
- ☒ Focus Groups
- ☐ Questionnaires/surveys
- ☐ Analysis of secondary data (medical record data, educational records, government or private sector datasets, etc.)
- ☒ Ethnographic observation
- ☐ Physiological measurements (e.g., EEG, EKG, MRI)
- ☐ Biospecimen collection (saliva samples, blood draws, hair samples, etc.)
- ☐ Mobile applications/data collection devices (e.g., Fitbits, actigraphs, etc.)
- ☐ Behavioral decisionmaking tasks (e.g., puzzles, interactive games, etc.)
- ☐ Physical activities such as walking and other forms of exercise
- ☐ Other procedures (briefly list types of procedures here if not covered by the check-boxes above): _____

Describe the **duration** of an individual's participation in the study *for each study activity* and the estimated total time for each participant to complete all study activities.

Participating teachers, students, community members and STEAM professionals will be regarded as partners in understanding the co-design. The research will be highly transparent and will adhere to the highest ethical standards. To answer our research questions, each co-design session and the summer institute as a whole will be audio recorded for the ETHS group. **As described above, audio recording of talk and participation will only occur if all participants consent to doing so (see consent forms).** This approach (and the risks involved) will be clearly explained in the recruitment process (see attached scripts). In addition to the (potential) audio recordings, PI Vossoughi and a student research assistant (to be added later to the study team) will take notes when they can during the summer institute that will then be developed into longer ethnographic fieldnotes. The audio recordings and fieldnotes of co-design sessions and the summer institute, and the fieldnotes of classroom level pedagogy and curriculum implementation are the primary sources of data for which we are seeking IRB approval at this time. We have also checked the box for interviews in order to create

the possibility of conducting short one-on-one interviews with adult participants following the summer institute. These interviews will focus primarily on participants' experiences of the co-design process and where they would like to see the project evolve and grow.

For CPS teachers, we will not be recording or documenting their co-design sessions with high school students during summer of 2020 due to CPS' current restrictions on virtual volunteering. However, during the time when teachers are engaging in co-design with students (end of July-August 2020), we will hold weekly 1-hour focus groups with the teachers. These focus groups (3-4 total) will create a space for teachers to share their professional expertise and reflections on the co-design process. Teachers will be asked to speak in general terms rather than describe interactions with specific students (see focus group protocol). If any student names are mentioned, they will not be included in the data that is analyzed. These sessions will provide data on teachers' reflections/perspectives regarding the process of co-designing interdisciplinary curriculum with students.

At this stage, the duration of participation in the study is from Winter 2020-Winter 2021. Study participants will participate in documented co-design meetings during the Spring of 2020, participate in the Summer 2020 institute and possible follow up interviews in late Summer/early Fall 2020, and can elect to allow for classroom observations in the Fall of 2020/Winter of 2021. However if we are able to garner support for the next phases of the project, we will submit a modification to IRB describing the nature of participation post Winter 2021. We will also revisit consent at this time with teachers since the nature of participation in the study may shift.

For the Fall 2020/Winter 2021 student focus groups, links to the attached student assent forms in Qualtrics will be sent to students directly over email with the attached recruitment script. Students who participated in the summer co-design will be contacted individually to describe the focus groups and ask if they would like to participate (using the recruitment script text). The number of students in each focus group will vary by school, but will be between 3 and 8 students (corresponding to the number of students who participated in the summer co-design in each context). The kinds of questions students will be asked are outlined in the attached student focus group protocol. These include questions about their first impressions of co-design, key moments they remember as particularly important to the process, whether co-design opened up new ways of thinking about education or interdisciplinary learning, how they think we could improve the co-design process and whether they think it would be valuable for future students to design curriculum and teaching alongside teachers.

We will work to ensure privacy by encouraging students to select a quiet and comfortable place to be during the focus group. However, if family members are present or overhear students' responses, we do not anticipate that this will present a large risk given that the kinds of questions we are asking are focused on students'

experiences in the co-design process and do not probe about personal or familial issues. Privacy will also be supported by using pseudonyms for students if any of their responses are shared within the general writing and reports that result from the work. This is stated in the assent/consent forms as well.

For student focus groups, a teacher who participated in the summer co-design with students will be present. While this is meant to meet the requirements of CPS RRB, it also allows for teachers to participate in the focus group in ways that can remind students of key parts of the process and hear students' reflections on the work. All teachers who would participate in the focus groups are already enrolled in the study. Their (minimal) participation in the focus groups will therefore fall within the scope of their existing enrollment in the research. The purpose of the teacher's presence is two fold: 1) to meet the requirements of CPS to have a school staff member present when students are engaging with the researcher; and 2) while the researcher will be asking the questions and working through the focus group protocol with students, the teacher may have their own thought or reflection to share in conversation with students since they were the ones doing the co-design with students over the summer. These roles will be clearly laid out at the start of the focus group so that teachers know they are primarily there to listen/observe but can chime in if they think it would be helpful to extend an idea or remind the group of a specific aspect of the project. This is in keeping with the collaborative nature of our work with teachers and students, since the focus groups serve as a space for collective reflection on the co-design process.

A risk here is that students may feel uncomfortable sharing more critical feedback about the design circles with their teachers present. Vossoughi will help to mitigate this risk by clearly stating from the outset that students should a) only share what they feel comfortable sharing and b) that any constructive feedback they have for us as a team will be helpful for the ongoing development of the project. Teachers will also reinforce this through their participation and the spirit of the work thus far has been collaborative so we anticipate that the focus groups will create a space for ongoing shared reflection on the work. However we will not push for critical feedback in ways that make students feel at all uncomfortable sharing with their teachers present.

9.0 Research with Vulnerable Populations (if children are the ONLY vulnerable population you plan to enroll, do NOT complete this section -- instead fill out Appendix A)

N/A see Appendix A

10.0 Incomplete Disclosure or Deception:

N/A

11.0 Consent Process:

The written consent process will take place over zoom, and begin by clearly outlining the nature and purpose of the study, and discussing with participants what we are hoping to learn from documenting the co-design process as well as curriculum implementation in the Fall. The recruitment scripts will be utilized here. We will then go over each section of the consent form in detail, and allow time for people to ask any questions or raise any concerns about the project. We will make clear that 1) participation in the co-design process does not require participation in the research; and 2) Audio recording is optional (see consent forms) even if people do consent to being part of the study. If they want to be part of the study but not be recorded, their participation can be documented through observational fieldnotes. We will also make clear that we cannot guarantee full privacy given the small risk of breach in the data. We will emphasize that participants are free to continue asking any questions they may have via email or phone (we will highlight our contact information so people know how to contact us), and that if they do enroll they are free to disenroll at any point. We will also communicate that participants can take the form home to think about it and bring it back at a later date. Students under 18 will be required to bring back parent consent in addition to their own assent forms in order to participate in the research. Here it is important to note that consent forms include the option of selecting not to enroll so that reminding participants to bring back forms does not function as a kind of coercion.

The same consent process will be utilized for the summer institute, when new participants (e.g. community members & STEAM professionals) will be joining the co-design process, and at the school/classroom level in Fall 2020/Winter 2021. PI Vossoughi will offer various times to connect remotely with participants, students + their parent/caregiver prior to the observation period, work through the recruitment script and spend time answering any questions that arise (see Appendix A for additional details).

For Summer 2020, consent forms for teachers (CPS) and teachers, parents, students and community members (ETHS) will be emailed to participants as PDF forms during the zoom meeting when PI Vossoughi will go over the consent process. During these sessions, she will read the relevant portion of the recruitment script and go over the PDF version of the consent forms. In addition to sending participants PDF versions of the consent forms over email, PI Vossoughi will use the zoom screen-share function to review each section. At this time teachers (CPS) and participants (ETHS) will be able to ask any questions or raise any concerns about the documents. PI Vossoughi will then instruct those who wish to enroll in the study to fill out and sign the IRB forms and send them back to her over email. Thus, X marks, printed names and digital signatures will be entered on the PDF itself and sent back to PI Vossoughi. The PI will also sign the portion that states “signature of person obtaining consent” as soon as forms are received. After both the participant and PI have signed the PDF consent form, a copy will be sent to the teachers (CPS) and participants (ETHS) for their records. This process is meant to

resemble in-person consent as much as possible by sharing PDF forms and going over the recruitment script and consent forms in detail over zoom.

For the Fall 2020/Winter 2021 student focus groups, links to the attached student assent forms in Qualtrics will be sent to students directly over email with the attached recruitment script. Students will be invited to ask any questions or points of clarification over email with PI Vossoughi. Students who wish to enroll in the study will then be asked to indicate their assent on the Qualtrics form (through selecting “I assent” or “I do not assent” and typing in their name) and provide an email for a parent/caregiver to whom Vossoughi will send the link to the Qualtrics consent form for the parent to review. Similar to students, parents/caregivers will be able to select “I consent” or “I do not consent” and type in their name to serve as a signature (which will be clearly stated on the Qualtrics form). The form will state: “I understand that by typing my name in the space below I am signing this form and therefore am indicating whether or not I provide informed consent for my child to participate in this study.” As outlined in Appendix A, students will also be asked if it would be helpful to send the parents’ recruitment email and consent form in a language other than English. This email will involve its own recruitment script and parents/caregivers will be able to ask PI Vossoughi any questions over email or by calling her directly. Once both the student assent form and their parent/caregivers’ consent form are received they will be considered enrolled in the focus group portion of the study. As soon as both forms are received, the PI will sign the form itself using a PDF signature and send a copy to both the student and parent/caregiver for their records.

12.0 Waiver of Participant Signature on Consent Form:

N/A

13.0 Waivers and Alterations of Consent Information:

N/A

14.0 Financial Compensation:

Teachers’ and other participants’ time will be covered for the co-design, summer institute and focus group reflections irrespective of whether they enroll in the study or not. In addition, teachers will receive a \$25 gift card for participating in an (30-40

minute) interview after the summer institute. Students will receive a \$25 gift card for their participation in the 45-60 minute focus group. The card will be shared as an e-card over email.

15.0 Audio/Video Recording/Photography

Only if all participants consent to being audio recorded, an audio-recorder will be used to document the co-design meetings and summer 2020 institute. For this phase of the work, no audio recordings will take place during classroom observations (Fall 2020/Winter 2021). Researchers will rely on fieldnotes to capture key pedagogical practices and forms of participation among students who elect to participate in the study and provide both assent and parental consent. Alongside fieldnotes, audio recording is important to capture the specifics of what people shared in the co-design process, as well as shifts in tone and positioning that emerge over time. Consistent with the standards of our field, our theoretical approach to learning as a micro-genetic process that takes shape through talk and interaction holds that such details of voice and discourse matter for the meaning that is being developed among participants (ideas they are building, questions they are asking, etc.), and for the qualities of collaborative design.

If full consent is given in the group, an audio recorder will be used to record key discussions, and events within the co-design meetings and summer institute. If full consent is obtained, co-design meetings will be audio-recorded at ETHS, and teacher focus groups will be audio recorded for CPS. If full consent is not obtained, PI Vossoughi will write ethnographic fieldnotes that do not include information on those participants who did not enroll in the study. In line with our approach to the ethical use of research on learning environments (Vossoughi & Escudé, 2016), participants will be invited to turn off the audio recorder at any point when they would prefer that we not be recording. In some cases, small group discussions will also be audio recorded in order to capture the ways teachers engage with one another in the process of co-design.

The use of audio recordings within the data analysis will take a number of different forms. Audio will be used to supplement the information that was gathered through raw jottings in order to develop a more comprehensive fieldnote. This will involve listening to the audio and writing play by play accounts of events as well as our interpretations of those events. After the end of the institute (starting in Fall 2020), the research team will catalogue and make activity logs for all audio recordings. Similar to the fieldnotes, activity logs segment a given audio recording based on 2-3 minutes chunks that align with natural shifts in activity and summarize what participants were saying and doing during that time. These activity logs will then be utilized within our data analysis software alongside fieldnotes and other data to help us identify the typicality and atypicality of our qualitative codes. In addition, creation of activity logs serves as a process through which to identify particular segments for closer micro-ethnographic

analysis. Interviews with enrolled teachers will also be transcribed and coded as part of the data set, with an eye towards answering our research questions.

All fieldnotes, audio and interview data will be stored on the RESFILES secure server. Only those who are named on this protocol will have access to the files. As described in our consent forms, if data is shared with others it will only be in the form of a conference presentation or professional development workshop, it will not be given over as a file to any other person or entity. The data will be stored for 7 years after the completion of the study.

Audio recording of the student focus groups will be required for participation.

16.0 Potential Benefits of this Research:

Study participants will have the opportunity reflect on their own experiences in the co-design and summer Institute and on the learning they may experience through participation. During interviews and focus groups, adult and student participants will be asked to reflect on the learning and collaborative thinking that they have been a part of through their participation. These opportunities for reflection may serve to enrich their learning and to develop meta-reflective ideas about processes of co-design that they may utilize in their own work.

Since we take a collaborative and participatory approach to research, participation in the study may provide an additional opportunity to learn about the research endeavor.

Because this work is proceeding in close collaboration with the CPS department of Social Sciences and Civics Education, another benefit involves opportunities for the district to learn about the conditions that support meaningful collaboration across teachers as they work to co-design and reflect on their curriculum and pedagogy. The district has also expressed interest in our support of a possible professional learning community as an outgrowth of this work. More broadly, the fields of educational research and learning sciences are poised to learn from local processes of co-design amongst educators working to imagine STEAM learning as it could be.

17.0 Potential Risks to Participants:

There are no foreseeable risks to others who are not participants in this study. Participants may experience varying levels of discomfort when engaging in conversations as a part of the co-design and reflective interview process. This discomfort may arise, for instance, if participants choose to share sensitive information about themselves that relates to the Institute's activities. However, the P.I. will make reasonable efforts to ensure that there are ample opportunities for study participants to be made aware that they do not have to share any information that they do not feel comfortable sharing, and will emphasize that anyone can turn the audio recorder off at any time. The consent forms explicitly address this risk to participants and seek to make

participants aware that they do not have to share any information that they feel uncomfortable sharing. It is also important to note that there is a risk of confidentiality breach as we will be (potentially) audio-recording and interviewing a small number of participants. However, any representation of teachers' talk or participation will be shared with teachers before publishing or sharing in research venues. All students will be given pseudonyms and since there is likely to be a larger number of student participants across schools/classrooms, the risk of confidentiality breach is much smaller.

18.0 Provisions to Protect Participant Privacy and Data Confidentiality:

All names and other identifying information will be removed from the study and a pseudonym (a fake name) will be created to protect study participants' privacy. The list of pseudonyms will be kept separately in a password protected PDF file on RESFILES.

Interviews will be conducted in a location where others cannot overhear (likely at the downtown Northwestern location). Student focus groups will be conducted on google classroom.

We plan to transcribe the audio-recordings of co-design processes and interviews. We will store the audio recordings (on RESFILES) after transcription since listening to the speakers (rather than just reading the transcript) provides meaningful information during the process of analysis.

Audio data will be immediately transferred from audio recorders to RESFILES upon recording, and promptly deleted from the audio recorders. Data will be stored for approximately 7 years.

19.0 Data Monitoring Plan to Ensure the Safety of Participants:

The only people who will have access to this data will be the PI and any approved team members. We will take several steps to ensure that the data we collect is kept safe and that participants' identities are protected, including the use of RESFILES. Additional steps include: using pseudonyms for all participant data, and following up with participants when we are developing papers to confirm that they consent to sharing part of their comments and/or interview reflections as part of a published paper, and to seek their perspectives on how we are framing or analyzing their work.

20.0 Long-term Data and Specimen Storage and Sharing:

The only people who will have access to this data will be the PI and approved team members. Data will only be shared among the PI and team using Northwestern's secure research data storage service.

If data is shared with others it will only be in the form of a conference presentation or professional development workshop, it will not be given over as a file to any other person or entity.

21.0 Qualifications of Research Team to Conduct the Research:

Dr. Shirin Vossoughi is an Assistant Professor of Learning Sciences within the School of Education and Social Policy at Northwestern. She has plentiful experience conducting qualitative and micro-ethnographic and audio-video based research through multiple research institutions, with a substantive focus on participatory design research. Her research focuses on learning, educational equity, and critical pedagogy and she has worked extensively with educators in a range of settings to co-design and reflect on their practice.

References:

Bang, M., and S. Vossoughi. 2016. "Participatory Design Research and Educational Justice: Studying Learning and Relations within Social Change Making." 34 (3): 173–193.

Bang, M., B. Warren, A. S. Rosebery, and D. Medin. 2012. "Desettling Expectations in Science Education." *Human Development* 55 (5–6): 302–318.

Gutiérrez, R. 2017. "Living Mathematx: Towards a Vision for the Future." *Philosophy of Mathematics Education Journal*, 32..

Gutstein, E. 2012. "Connecting Community, Critical, and Classical Knowledge in Teaching Mathematics for Social Justice." In B. Sriraman (Ed.) *Alternative Forms of Knowing (In) Mathematics*, 300–311. Rotterdam: Sense Publishers.

Morales-Doyle, D. (2017). Justice-centered science pedagogy: A catalyst for academic achievement and social transformation. *Science Education*, 101(6), 1034-1060.

Medin, D. L., and M. Bang. 2014. *Who's Asking?: Native Science, Western Science, and Science Education*. Boston, MA: MIT Press.

Nasir, N. S. 2002. "Identity, Goals, and Learning: Mathematics in Cultural Practice." *Mathematical Thinking and Learning* 4 (2–3): 213–247.

Nasir, N. S., Rosebery, A. S., Warren, B., & Lee, C. D. (2006). Learning as a cultural process: Achieving equity through diversity. In R. K. Sawyer (Ed.), *The Cambridge handbook of the learning sciences* (pp. 489–504). New York: Cambridge University Press.

Philip, T. M., A. Gupta, A. Elby, and C. Turpen. 2018. “Why Ideology Matters for Learning: A Case of Ideological Convergence in an Engineering Ethics Classroom Discussion on Drone Warfare.” *Journal of the Learning Sciences* 27 (2): 183–223.

Pinkard, N., S. Erete, C. K. Martin, and M. McKinney de Royston. 2017. “Digital Youth Divas: Exploring Narrative-Driven Curriculum to Spark Middle School Girls’ Interest in Computational Activities.” *Journal of the Learning Sciences* 26 (3): 477–516.

Sengupta-Irving, T., & Vossoughi, S. (2019). Not in their name: re-interpreting discourses of STEM learning through the subjective experiences of minoritized girls. *Race Ethnicity and Education*, 22(4), 479-501.

Vakil, S. 2018. “Ethics, Identity, and Political Vision: Toward a Justice-Centered Approach to Equity in Computer Science Education.” *Harvard Educational Review* 88 (1): 26–52.

Vossoughi, S., & Escudé, M. (2016). What does the camera communicate? An inquiry into the politics and possibilities of video research on learning. *Anthropology & Education Quarterly*, 47(1), 42-58.

Vossoughi, S., Hooper, P. K. & E. Meg. 2016. “Making through the Lens of Culture and Power: Toward Transformative Visions for Educational Equity.” *Harvard Educational Review* 86 (2): 206–232.



May 22, 2020

To the CPS Research Review Board:

I am writing this letter to express my support for the project entitled “Cultivating Expansive Learning at the Intersections of STEAM, Critical Literacies and Civics Education.” This project involves implementing and documenting processes of co-design during Summer 2020 with a small group of teachers, students and families from our school. This co-design process is aimed at co-developing robust and rigorous forms of transdisciplinary learning that support our students to engage with Science, Math, Literacy and Social Science in ways that are meaningfully connected to their communities and lived experiences. We believe this project is closely aligned with our department’s service learning projects, as it will create opportunities for students to meet the graduation requirement while taking an interdisciplinary and intergenerational informed action. We hope to learn with participants how to best support school teams in developing these meaningful service learning projects.

In partnership with Dr. Shirin Vossoughi at Northwestern, our teachers will also be doing preliminary documentation of what these curricular and pedagogical approaches look like in their classrooms in the 2020-2021 school year, with appropriate permissions from students and parents/caregivers, and with appropriate adjustments for shifts in learning arrangements based on the COVID-19 pandemic.

Lastly, Dr. Vossoughi and her team will be sharing insights and resources developed from this project with both participating schools and with the district.

Sincerely,

Alejandra Frausto
Project Based Learning Manager
Chicago Public Schools



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Principal Douglas L. Maclin

Dr. Latasha Taylor ▪ Mrs. Angelique Russell-Williams
Assistant Principals

May 7, 2020

To the CPS Research Review Board:

I am writing this letter to express my support for the project entitled “Cultivating Expansive Learning at the Intersections of STEAM, Critical Literacies and Civics Education.” This project involves implementing and documenting processes of co-design during Summer 2020 with a small group of teachers, students and families from our school. This co-design process is aimed at co-developing robust and rigorous forms of transdisciplinary learning that support our students to engage with Science, Math, Literacy and Social Science in ways that are meaningfully connected to their communities and lived experiences.

In partnership with Dr. Shirin Vossoughi at Northwestern, our teachers will also be doing preliminary documentation of what these curricular and pedagogical approaches look like in their classrooms in the 2020-2021 school year, with appropriate permissions from students and parents/caregivers, and with appropriate adjustments for shifts in learning arrangements based on the COVID-19 pandemic. Lastly, Dr. Vossoughi and her team will be sharing insights and resources developed from this project both with our school and with the district.

Through this interaction, we hope to provide students with deeper and more equitable access to interdisciplinary STEM principles. We look forward to collaborating with Dr. Vossoughi and her team to produce an interactive and engaging literacy rich STEM experience for students at Chicago Vocational Career Academy. The goals of this project align well with our philosophy towards learning and education as we look to increase STEM efficacy and mastery in all of our students.

Sincerely,

Douglas L. Maclin

Douglas L. Maclin, Principal



LINCOLN PARK HIGH SCHOOL

2001 N. Orchard St.
Chicago, IL 60614
P: 773-534-8130
F: 773-534-8218

WWW.LINCOLNPARKHS.ORG

Dr. Eric Steinmiller
Principal

William Daniels
Assistant Principal

Cynthia Watson
Assistant Principal

Adam Stucky
Assistant Principal

July 1, 2020

To the CPS Research Review Board:

I am writing this letter to express my support for the project entitled “Cultivating Expansive Learning at the Intersections of STEAM, Critical Literacies and Civics Education.” This project involves implementing and documenting processes of co-design during Summer 2020 with a small group of teachers, students and families from our school. This co-design process is aimed at co-developing robust and rigorous forms of transdisciplinary learning that support our students to engage with Science, Math, Literacy and Social Science in ways that are meaningfully connected to their communities and lived experiences. In partnership with Dr. Shirin Vossoughi at Northwestern, our teachers will also be doing preliminary documentation of what these curricular and pedagogical approaches look like in their classrooms in the 2020-2021 school year, with appropriate permissions from students and parents/caregivers, and with appropriate adjustments for shifts in learning arrangements based on the COVID-19 pandemic. Lastly, Dr. Vossoughi and her team will be sharing insights and resources developed from this project both with our school and with the district.

Sincerely,
Dr. Eric Aron Steinmiller
Lincoln Park High School
Principal
esteinmille@cps.edu



Nicholas Senn High School

An IB World School

A Magnet School for the Arts

MS. MARY BECK
PRINCIPAL

MR. TIMOTHY ADAMS
MR. CARTER CAREY
MS. JENNIE MEDELLIN
ASSISTANT PRINCIPALS

May 22, 2020

To the CPS Research Review Board:

I am writing this letter to express my support for the project entitled “Cultivating Expansive Learning at the Intersections of STEAM, Critical Literacies and Civics Education.” This project involves implementing and documenting processes of co-design during Summer 2020 with a small group of teachers, students and families from our school. This co-design process is aimed at co-developing robust and rigorous forms of transdisciplinary learning that support our students to engage with Science, Math, Literacy and Social Science in ways that are meaningfully connected to their communities and lived experiences.

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If you have any questions, I can be reached at mpbeck@cps.edu.

Sincerely,

Mary P. Beck
Principal
Senn High School



Walter Payton College Preparatory High School

1034 N. Wells Chicago, Illinois 60610
773.534.0034 (office) 773.534.0035 (fax) www.wpcp.org



May 21, 2020

To the CPS Research Review Board:

I am the incoming principal for Walter Payton College Preparatory High School (beginning July 1, 2020). I am writing this letter to express my support for the project entitled "Cultivating Expansive Learning at the Intersections of STEAM, Critical Literacies and Civics Education." This project involves implementing and documenting processes of co-design during Summer 2020 with a small group of teachers, students and families from our school. This co-design process is aimed at co-developing robust and rigorous forms of transdisciplinary learning that support our students to engage with Science, Math, Literacy and Social Science in ways that are meaningfully connected to their communities and lived experiences. In partnership with Dr. Shirin Vossoughi at Northwestern, our teachers will also be doing preliminary documentation of what these curricular and pedagogical approaches look like in their classrooms in the 2020-2021 school year, with appropriate permissions from students and parents/caregivers, and with appropriate adjustments for shifts in learning arrangements based on the COVID-19 pandemic. Lastly, Dr. Vossoughi and her team will be sharing insights and resources developed from this project both with our school and with the district.

Sincerely,

A handwritten signature in black ink, appearing to read 'Melissa Resh'.

Melissa Resh
Principal (as of 7/1/2020)
Walter Payton College Prep