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The Interactive Research Methods Lab: A Hub for the Promotion of Educational Change based on Methodological Equity

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Abstract

In this article we present the Interactive Research Methods Lab as a hub that facilitates an empowering and emancipatory model leading to the promotion of educational change based on an emerging methodological equity approach. We describe the origins, evolution and key initiatives of this innovative physical and virtual space in the Bagwell College of Education (Kennesaw State University) that challenges the traditional approaches to teaching and learning research methods, by promoting the development of a critical inquiry culture among pre-service and in-service teachers.

Keywords

Interactive Research Methods Lab; Hopscotch; Educational change; Methodological Equity

El “Interactive Research Methods Lab”: Un Hub para la promoción del Cambio Educativo basado en la equidad metodológica

Resumen

En este artículo presentamos el *Interactive Research Methods Lab* como lugar de encuentro que facilita un modelo de empoderamiento y emancipación que conduce a la promoción del cambio educativo basado en un enfoque emergente de equidad metodológica. Describimos los orígenes, la evolución y las iniciativas clave de este innovador espacio físico y virtual en el

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Bagwell College of Education (Kennesaw State University) que desafía los enfoques tradicionales de enseñanza-aprendizaje de métodos de investigación, promoviendo el desarrollo de una cultura de investigación crítica entre los maestros/as tanto en activo como en formación.

Palabras clave

Interactive Research Methods Lab; Hopscotch; Cambio Education; Equidad Metodológica

1.Origins of the Interactive Research Methods Lab. A personal challenge out of struggle

Have you ever struggled when working in the research design for a study or a grant proposal? Perhaps you had issues when elaborating the methodological chapter for your doctoral dissertation. You might still remember the cold sweat in the back of your neck everytime you were asked about the study for your dissertation or the research questions driving it. If so, please don't worry at all! I am one of yours. I did struggle when having to think through the research design for my dissertation.

In graduate school at Universidad de Valladolid (Spain), I was trained as a traditional educational researcher always under a post-positivistic worldview in which quantitative research was Hobson's choice. I struggled when dealing with the methodology for my dissertation since I was interested in studying how undergraduate students collaborated in an engineering course (Jorrín-Abellán, 2012), and was in need of alternative methodologies. I had to cross the pond and spend a couple of months at the University of Illinois at Urbana Champaign (UIUC), in order to learn from the best how qualitative research works (Stake, 2010).

After defending my dissertation, I soon began teaching research methods to graduate students at Universidad de Valladolid, my *Alma Mater*. I usually felt the struggles of my students when having to make decisions among the plethora of philosophical frameworks, and methodological approaches existing in the field of Educational Research (Groenewald, 2004). However, as a junior faculty I couldn't find ways of helping my students other than providing them with the best resources I was able to find at the time.

I left Spain in 2014 and began working for Kennesaw State University (KSU), a public R2 institution (high research activity) with 42,000 students in the suburbs of Atlanta. One Thursday evening during the fall semester of 2014, after a three-hour class on advanced qualitative research methods I realized that my students in this side of the pond were also struggling. I couldn't stop asking myself why teaching and learning research methods is so difficult. The following shows the journal entry I recorded on October 9th, 2014 in this regard.

October 9th, 2014

Week eight of my very first semester at Kennesaw State University. It is 9:00 pm and I just finished teaching a three-hour class on advanced qualitative research methods. I thought things would be different here. But they are not!

Doctoral students' struggles are the same ones my graduate students were having back in Spain. Actually they are very close to my own struggles as a doctoral student. Why learning research methods is so frightening for our students? I need to find out ways to better teach them the plethora of philosophical frameworks, research traditions, and methods existing in qualitative research without overwhelming them. But, is that even possible? The field is so complex and diverse that I totally understand how daunting it could be.

I still remember how difficult it was for me to move from a positivistic worldview to a more constructivist and interpretive one... I was trained in traditional research methods in Psychology while getting my degrees in Special Education and Educational Psychology. Even my doctoral coursework was deeply focused on traditional forms of research. However, nobody really helped me identify the research design that would better fit the research study I had in mind for my dissertation. It seems that my professors were taking for granted that I would learn by myself the key methodological aspects on how to generate a well-informed research design. Why is that? They would have never taken for granted almost anything in the rest of my content courses. I cannot imagine them assuming that I would learn by myself how to implement Cognitive behavioral therapy... right? Why nobody ever told me where to begin, which questions I should ask myself to start putting together the research design for my dissertation? My students are feeling the same. I have to do something...

As it is described in the previous vignette, the struggles of my students at KSU were similar to the ones graduate students used to have during my postdoc at UIUC. They were also pretty close to the ones my students had in Spain (University of Valladolid). Actually, they were almost the same ones I struggled with when working on my own dissertation. It was then when I realized that I had to do something. Even though my previous research background was in the fields of Technology Enhanced Learning, and Computer Supported Collaborative Learning, at that point I decided to change gears and started researching potential ways to better help novice researchers and future teachers in generating well-informed research designs. I was deeply interested in finding ways of challenging traditional approaches to the teaching and learning of research methods. I needed to make sure that my students, future teachers, were able to learn how to generate and implement proper research designs for the promotion of effective change and innovation at their schools. I was in need of helping preservice teachers develop a vocational inquiry culture; a culture of change. The challenge was up.

2. The Aha Moments

2.1 The Hopscotch Metaphor

In order to find ways of challenging the traditional approaches to the teaching and learning of research methods (Breuer & Schreier, 2017), in fall 2014 I began working on a review of literature (Jorrín-Abellán, 2016) (see figure 1) that soon revealed a number of studies addressing how daunting and frightening the teaching and learning of research methods is (Cooper et al., 2012) (Lesko et al., 2008). I also found evidence of a clear lack of attention, and scarcity of innovation in the teaching of research methods (Günter, 2008). The review entailed the selection and analysis of over 80 seminal works, allowing the identification of a

number of key components for the development of well-informed research designs in education.

One night, while in the middle of the literature review process I was re-reading an old book by Julio Cortázar called *Hopscotch* (1963), and the magic happened (“aha” moment #1). I realized that *Hopscotch* could be the metaphor I was looking for to create a model and a webtool to help my students in the generation of their research designs. The following vignette shows the journal entry I recorded on October 18th, 2014.

October 18th, 2014

It is 11.45 pm and after a long day of grading I am reading the final pages of a novel before Morpheus catches me in his arms. However, it seems to be one of those

nights in which sleeping becomes elusive. I finish the novel and find myself deciding which book, of the very few I was able to bring with me when I moved from Spain in August, to read next. Among them I find *Hopscotch*, by Julio Cortázar, my favorite book in the world. I decide to give it a new try. It’s been years since the last time I read it.

Hopscotch is a book of books. It is considered the first interactive book. It is split into 56 regular chapters and 99 “expendable” ones. Readers may read straight through the regular chapters (ignoring the expendable ones) or follow numbers left at the end of each chapter telling the reader which one to read next (eventually taking her through all but one of the chapters). Even though published in 1963, it can be defined as hypertext fiction.

After reading a few pages of Horatio’s hypnotic story, the magic happened! — *Hopscotch*! A sequence of steps! A popular transcultural and transcendental playground game that everybody understands! A game connecting the earth with the sky, the real world with the world of the ideas... A game that reinforces the idea of going over each of the steps each time we advance to a new one. That is what I need!

I then organized the key findings from the review of literature, and built the *Hopscotch* model (Jorrín-Abellán, 2016, 2019, 2021) including nine recursive steps to help the generation of research designs¹ (Step 1-Worldview of the researcher; Step 2-Topic & Goals; Step 3-Conceptual framework; Step 4-Research design; Step 5-Research questions; Step 6-Data gathering; Step 7-Data Analysis; Step 8-Trustworthiness & Validity; Step 9-Ethics). I decided to use the *Hopscotch* metaphor since everybody understands this popular transcultural and transcendental playground game that aims at connecting the earth with the sky, the physical world with the world of forms and ideas, theory and practice. The sequence of steps, although visually lineal, helped us reinforced the idea of going over each of the steps each time we advance to a new one.

In early 2015, I built and launched a webtool² using the *Hopscotch* metaphor to help bridge the gap between the theory behind the generation of research designs, and the actual practice in doing so. The webtool guides users through the steps of *Hopscotch*, providing

¹ See: <https://hopscotchmodel.com/Steps/>

² See: <https://hopscotchmodel.com>

multimedia information and resources to help them make informed decisions and respond to the questions posed at each step (see: <https://hopscotchmodel.com>).

In 2017, after having used the webtool for almost 2 years, I conducted a formal evaluation of it to assess if it was helping users. The results were pretty positive (Jorrín-Abellán, 2019), and helped us generate a 2.0 version of the webtool. The new version included enhanced multimedia information; allowed the generation of qualitative, quantitative, and mixed-methods designs in both English and Spanish, and also helped the creation of visual representations for 7 types of qualitative designs, 4 types of quantitative, and 4 types of mixed-methods designs.

One key limitation identified by the users, was the lack of social spaces to share and discuss the generated research designs. So, I began thinking in the possibility of creating a physical space to use Hopscotch in a face-to-face social fashion.

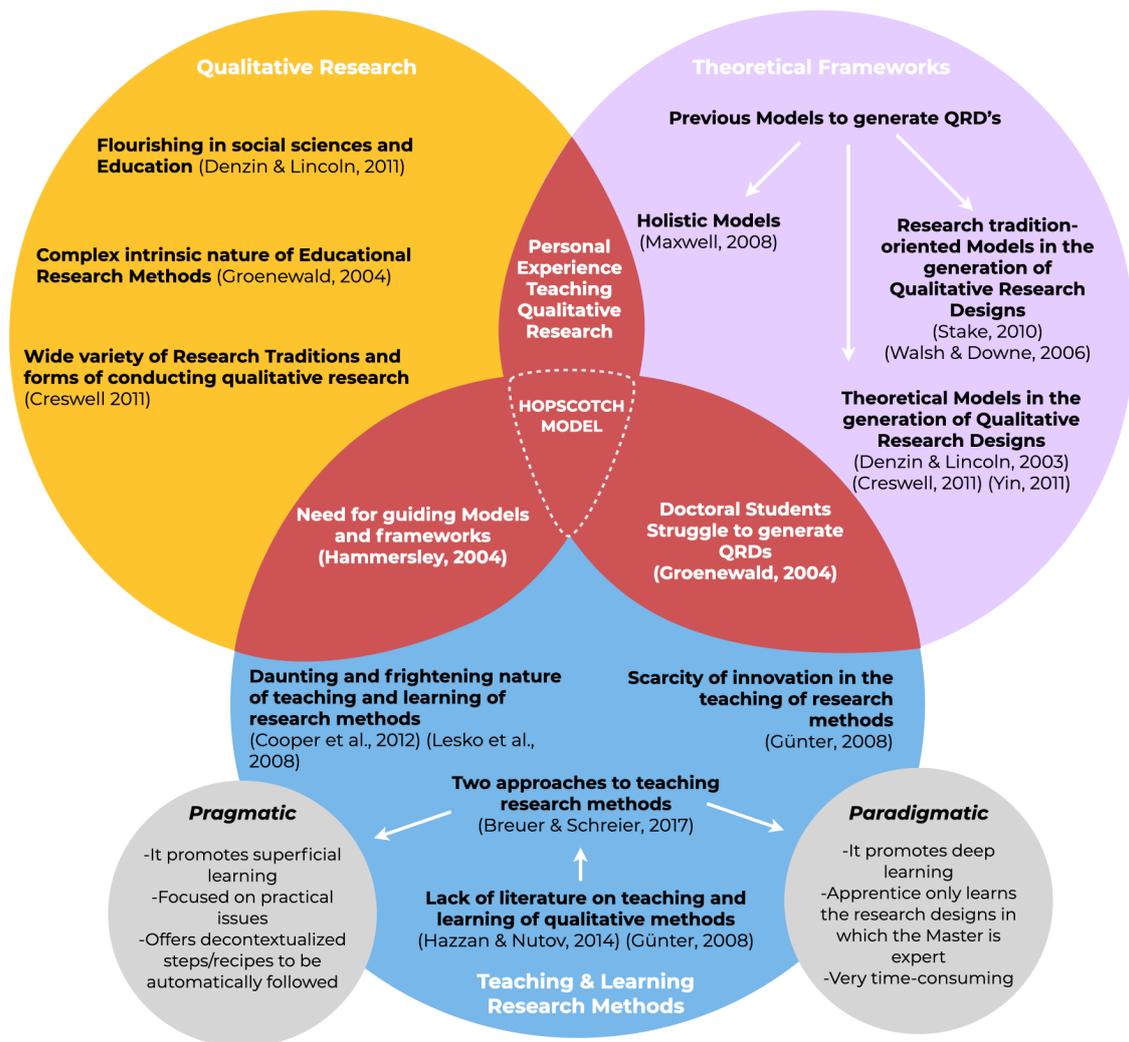


Figure 1. Conclusions of the Literature Review conducted in support of Hopscotch

Playing Hopscotch: the Interactive Research Methods Lab

In 2018, I had the chance of visiting Universidad del Rosario in Bogotá (Colombia). After delivering a couple of workshops on Hopscotch for both doctoral students and graduate faculty, my good friend and colleague Rafael Méndez took the time to show me the “Centro de Recursos para el Aprendizaje y la Investigación³” (Resource Center for Learning and Research) (CRAI) and the IDEA B+LAB⁴, a business lab in the heart of the city. The exquisite innovative nature of both spaces made me start thinking in potential ways of replicating what I was seeing around Hopscotch (“aha” moment #2). This initial spark, in combination with my research background in the educational uses of augmented reality in K-12 settings (Muñoz-Cristóbal et al., 2015) was the origin of the Interactive Research Methods Lab (IRML).

The overall mission of the IRML is to improve the education of students (future teachers) and faculty who are learning and teaching research designs/methods in Social Sciences and Education by curating and generating practical, informative open access resources and delivering them via innovative methods. The lab also aims at drawing meaningful connections between educational research methods/design and the real world, with particular focus on schools, school districts, and the communities our students and faculty serve.

3. Aims and Components of the Interactive Research Methods Lab

The IRML provides undergraduate, graduate students and novice researchers interested in generating methodologically-sound research designs with an across-spaces learning experience (Muñoz-Cristóbal et al., 2015), meaning that users are able to interact with and in different face-to-face, virtual, and augmented modalities. The layout and contents of the lab are aligned with the Open Science movement (European Commission, 2016) and it is based on the principles of Dewey’s (1916) Learning by Doing theory and progressive education (i.e., hands-on projects, expeditionary learning, focused thematic units, problem solving and critical thinking, collaborative learning, personalized learning, and the integration of community service and service learning projects).

The IRML offers a physical space in the Bagwell College of Education and a virtual interactive space⁵ for distance users. The physical space (see figure 2) provides an itinerary organized around the nine steps of Hopscotch. Each step is represented by a decal on a dry-erase wall, where students record ideas and make decisions based on information provided via Augmented Reality Contents (ARC).

The AR contents were created by our team using Metaverse Studio (n.d.), a tool for the generation of AR learning experiences that uses a block programming interface. Users of the lab, with as-needed assistance from the research methodologists on our team are able to visualize and interact with the AR contents by pointing their own devices (i.e., cell phones, iPads) at the AR markers embedded in the decals on the walls (see figure 3).

³ <https://www.urosario.edu.co/CRAI/inicio/>

⁴ <https://www.urosario.edu.co/Idea-B-lab-Bussiness-Laboratory/inicio/>

⁵ <http://irml.kennesaw.edu>



Figure 2. Physical Space of the Interactive Research Methods Lab

For each of the nine steps, the AR content describes the purpose of the step, directs users to watch a brief overview video about the topic, provides scaffolded resources, and asks users to respond to a culminating question (e.g., “Are you ready to define your research topic?”). The answers, provided in both textual and multimedia fashion, are collected on a virtual “wall” by the Metaverse system. User responses are then projected on the main screen in the IRML, thereby promoting active discussion and reflective thinking about the methodological choices being made.

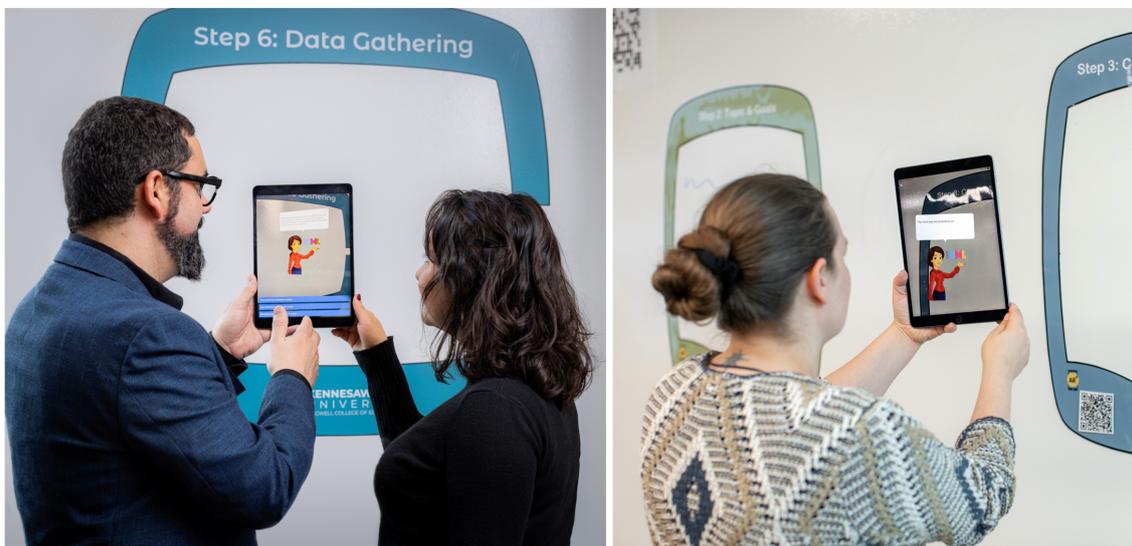


Figure 3. Interaction with Metaverse AR markers in the physical space of the IRML

The virtual space of the lab includes a 360° tour⁶ that replicates the experience students have in the physical space. As shown in figure 4, online users can access the virtual tour and use their phone or tablet to scan the AR codes that are associated with the points of interest included for each step of the process. Students may also use a virtual reality headset if they prefer an immersive experience while interacting with the AR contents.

⁶ https://irml.kennesaw.edu/instructional-resources/virtual_tour.php.

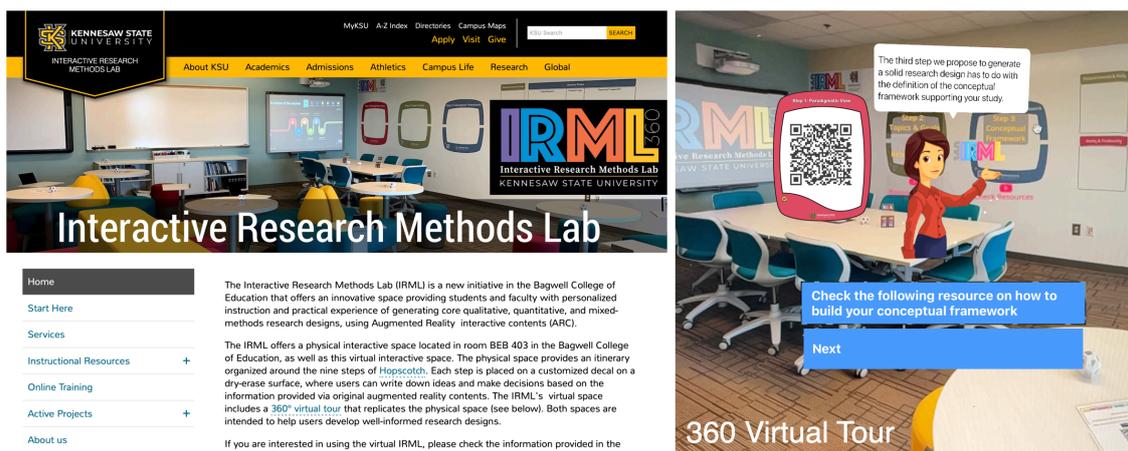


Figure 4. Overview of the virtual space of the IRML

In addition to the 360° virtual tour, the online lab also offers a number of interactive resources for each of the steps for the generation of research designs⁷; reusable lesson plans⁸ that have been developed in collaboration with faculty (instructors) interested in embedding the IRML as a resource into their regular courses or extra-curricular activities (Jorrín-Abellán et al., 2020); a virtual library⁹ with research guides generated in collaboration with our graduate librarian, and finally; a pocket version of the lab¹⁰ that can be downloaded, printed and used by anybody at home.

4. IRML: A hub for educational change

We understand the Interactive Research Methods Lab, as a hub for the promotion of educational change based on methodological equity. We define “methodological equity” as the provision of equitable access to high quality methodological resources and practices (i.e. professional development) able to promote and support the development of an inquiry culture among pre-service and in-service educators.

In the same way that Equity Pedagogy (Ratnam, 2020) is an approach in which teachers develop culturally-responsive teaching strategies and cultivate classroom environments that better support all students, especially those who have been disadvantaged in school and the outside society (Banks & Banks, 1995), the promotion of methodological equity also aims at cultivating the gifts, talents and diverse backgrounds of each and every research methods apprentice, no matter their origin, resources, or geographical location.

As a result, methodological equity can be seen as a critical emancipatory (Freire, 1993) empowering device for teachers, since access to high quality methodological resources and practices can allow them to promote informed change based on data collected through well-designed studies. Over the last two decades, education reforms have emphasized the importance of rigor in schools and renewed interest in data-driven decision making, or “systematic collection, analysis, examination, and interpretation of data to inform practice and policy in educational settings” (Mandinach, 2012, p. 71). We believe that the systematic analysis of schooling practices can be best achieved by in-service teachers that are well-trained in the use of research methods. Additionally, we also think that teachers must

⁷ See: https://irml.kennesaw.edu/instructional-resources/resources_each_step.php

⁸ See: https://irml.kennesaw.edu/instructional-resources/lesson_plans.php

⁹ See: <https://libguides.kennesaw.edu/IRML>

¹⁰ See: https://irml.kennesaw.edu/instructional-resources/pocket_lab.php

become active vanguard agents in providing rigorous evidence on which to ground their practice. This will only be attainable if they are offered improved methods, tools, and procedures that enable them to analyze thoroughly their daily practices.

Traditional approaches to professional development (PD) fail to adequately address teachers' professional learning needs, leaving them unprepared to face these demands (Gulamhussein, 2013, p. 3). Teacher PD studies have shown that simply exposing teachers to a new concept or practice has little to no impact, as material is often presented as "one-size-fits-all." Darling-Hammond et al. (2017) define effective PD as "structured professional learning that results in changes in teacher practices and improvements in student learning outcomes" (p. 5) and assert that PD is more likely to be effective when it incorporates active learning, supports collaboration among teachers, and involves coaching support.

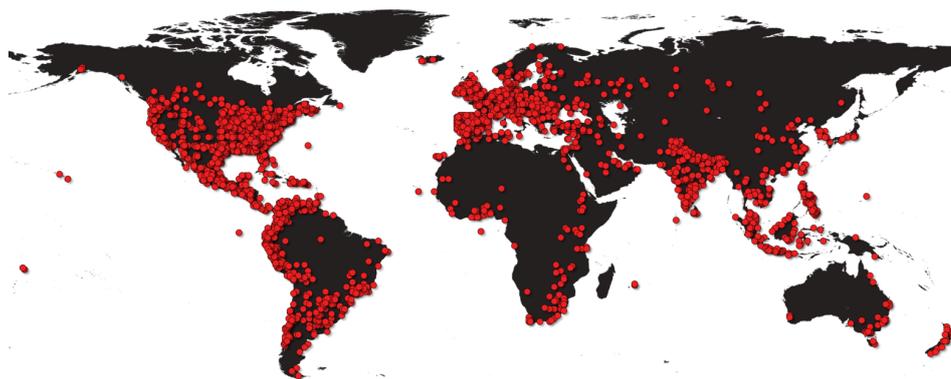
Besides Darling-Hammond et al.'s recommendations, teachers also must be critical, reflective consumers of information provided in PD. To promote effective PD and foster more critical reflection among teachers, schools must encourage the development of inquiring attitudes toward life within schools (Mitchell, 1931). If teachers are to become inquirers, schools must create opportunities for them to ask questions; investigate through reading, observation, and participation; create, collaborate, and learn from others; and reflect on their own learning experiences (Bruce, 2009). These conditions, in their alignment with Darling-Hammond's definition, describe an empowering model of PD tailored to teachers' specific contexts and needs, that can also be understood as a critical emancipatory (Freire, 1993) empowering device.

In this sense, and in addition to the resources already described in previous sections, the IRML offers a number of open-access resources like Hopscotch (Jorrín-Abellán, 2016, 2019), Hopscotch 4-Teachers¹¹ (Jorrín-Abellán, 2021), and Hopscotch 4-SoTL¹² (Jorrín-Abellán, 2021) that aim at promoting fair access and support to methodological devices for the promotion of informed educational change. Previous tools can be used for the initial training of pre-service teachers, as well as for the professional development of those that are already active professionals (in-service teachers).

¹¹ <https://hopscotchmodel.com/4-teachers/>

¹² <https://hopscotchmodel.com/4-sotl/>

Hopscotch: 85,000 + users in 196 countries



IRML: 5,000 + users in 48 countries

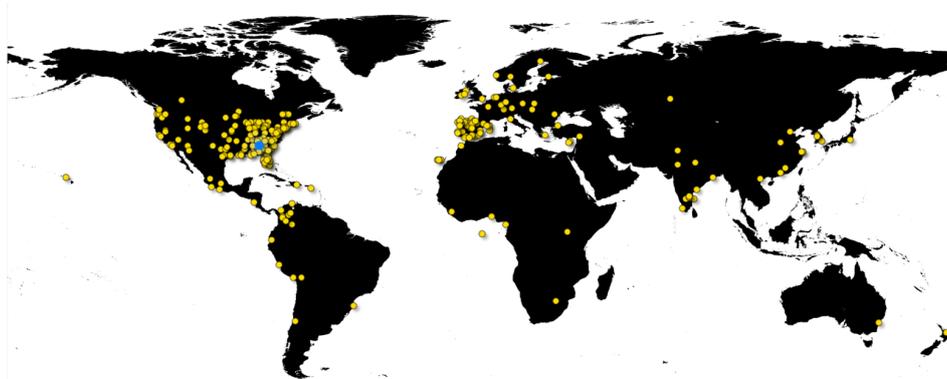


Figure 5. Use of Hopscotch and the IRML

As represented in figure 5, the use of both Hopscotch and the Interactive Research Methods Lab has been profuse in the last five years. Hopscotch (including its versions for teachers and for SoTL) has been utilized since 2017 by over 85,000 users in 196 countries. In addition, the virtual space of the IRML has received since 2020 over 5,000 visits from users in 48 countries. Previous usage data can be seen as initial proof of the methodological equity practices that have been promoted so far by both Hopscotch and the IRML.

5. Current uses of the IRML for the promotion of educational change

The IRML's team¹³ implements, facilitates and promotes a variety of activities with the aim of establishing the lab as a hub for the promotion of educational change. Currently, the initiatives that are carried out at the lab can be divided in three (see table 1).

¹³ https://irml.kennesaw.edu/about_us.php

Table 1.
Current uses of the Interactive Research Methods Lab

<p>1. Promotion of Educational Change by teaching research methods to pre-service teachers</p> <p>Use of Hopscotch and the IRML for the development & implementation of research methods lesson plans for undergraduate students in education.</p>
<p>2. Promotion of Educational Change by teaching research methods to in-service teachers</p> <p>Development & implementations of research methods lesson plans for graduate students in education (in-service teachers)</p> <p>Use of Hopscotch 4-Teachers for the development of research designs to study innovations in elementary, middle grades education and high school settings.</p>
<p>3. Promotion of Educational Change by teaching SoTL research methods to Higher education faculty</p> <p>Development of research designs for Scholarship of Teaching and Learning studies using Hopscotch 4-SoTL</p>

The lab has been extensively used for the promotion of educational change by teaching research methods to pre-service teachers in a personalized and innovative fashion. Lesson plans are co-designed on a regular basis by the IRML team in collaboration with faculty (instructors) interested in embedding the lab as a resource into their regular courses or extra-curricular activities (Jorrín-Abellán et al., 2020). A sample of representative lesson plans that have been generated so far can be found in the IRML's website¹⁴.

The co-design of each lesson plan involves at least one member of the IRML's team and one faculty member who would be teaching the lesson. The complete co-design process for each lesson plan takes approximately two weeks, including both face-to-face and virtual collaborative work. The goal of the co-design sessions is to collaborate in developing lesson plans that, when implemented, would catalyze authentic active learning experience for students in the IRML. The generated lesson plans include use of both AR contents and multimedia resources to help students generate tangible products, such as original research designs, literature review synthesis matrices, visual representations of research designs, and visual representations of supporting conceptual frameworks.

An example of lesson plan that was developed for undergraduate students (future teachers) is the one titled: Developing students' Mathematics Identities and Belongingness¹⁵. It was co-designed in collaboration with an a Professor of Elementary Mathematics Education, and it aimed at helping a group of black female undergraduate students to collaboratively develop a research design to study how to better generate mathematics lesson plans for elementary students attending to their mathematics identities and belongingness.

¹⁴ https://irml.kennesaw.edu/instructional-resources/lesson_plans.php

¹⁵ https://irml.kennesaw.edu/instructional-resources/lesson_plans.php

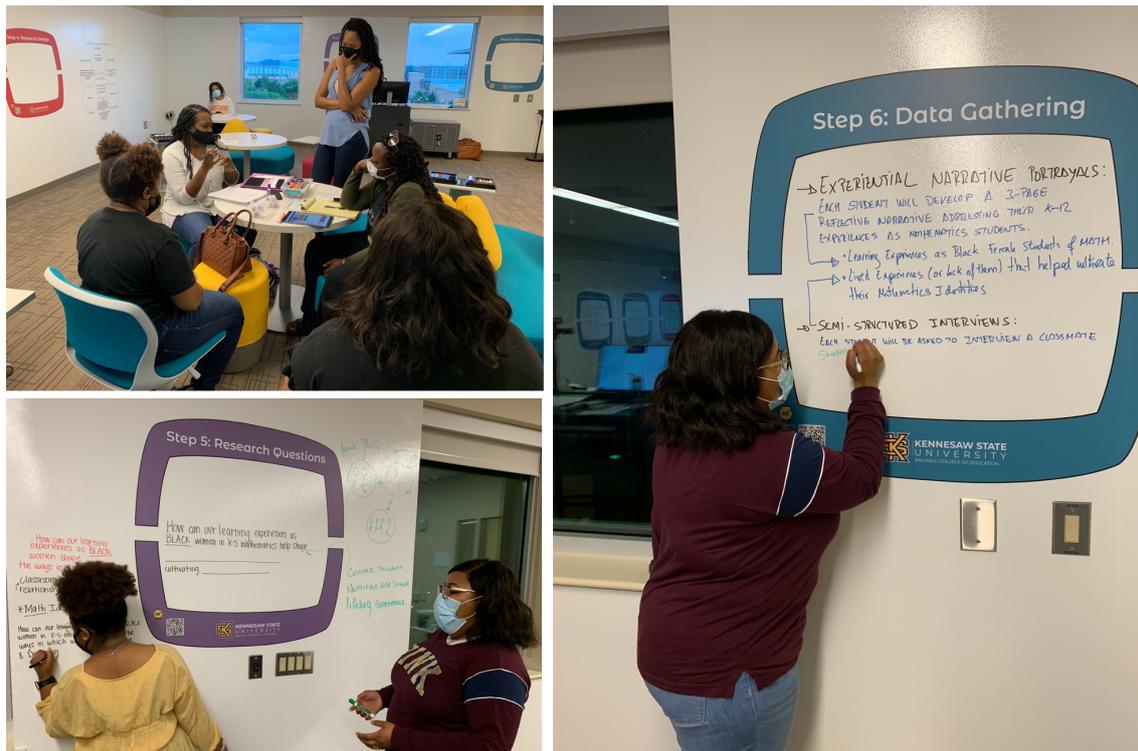


Figure 6. Undergraduate students working at the IRML

More particularly, the participating students developed and implemented a narrative research design with the aim of collecting stories from their own experiences as female black students studying mathematics all the way from elementary to higher education (see figure 6). They were interested in uncovering some of the reasons why most of them never enjoyed their math classes, due in part to the inability of the educational system to generate a sense of belongingness in them. After analyzing their own personal journey and experiences, pre-service teachers develop mathematics lesson plans to be implemented during their practicum in regular schools, including elements to better promote the sense of belongingness in students from underrepresented communities. This particular initiative can be seen as an evidence of the eventual impact that the work promoted in the lab with future teachers is already having not only in their own initial training, but also in the schools in which they are doing their practicum.

A second set of initiatives has to do with the promotion of educational change by teaching research methods to in-service teachers. In the IRML we also develop lesson plans for graduate students involved in their doctoral degree who are full-time in-service teachers or school administrators (i.e. school principals). An example of lesson plan that was developed for graduate students (in-service teachers) is the one titled: Conceptual Frameworks & Research Design¹⁶. This lesson plan was co-designed in collaboration with faculty teaching ED 9300-Conceptual Frameworks and Research Design (CFRD), the final seminar doctoral students take in the Doctorate of Education programs offered by the Bagwell College of Education (Kennesaw State University). This 15-week course assists doctoral candidates in conceptualizing, identifying the components of, and articulating the emerging conceptual framework for their dissertations. Moreover, the course also helps students connect and align the developed conceptual framework with the specific research design to be used in their dissertation studies.

¹⁶ https://irm1.kennesaw.edu/instructional-resources/lesson_plans.php

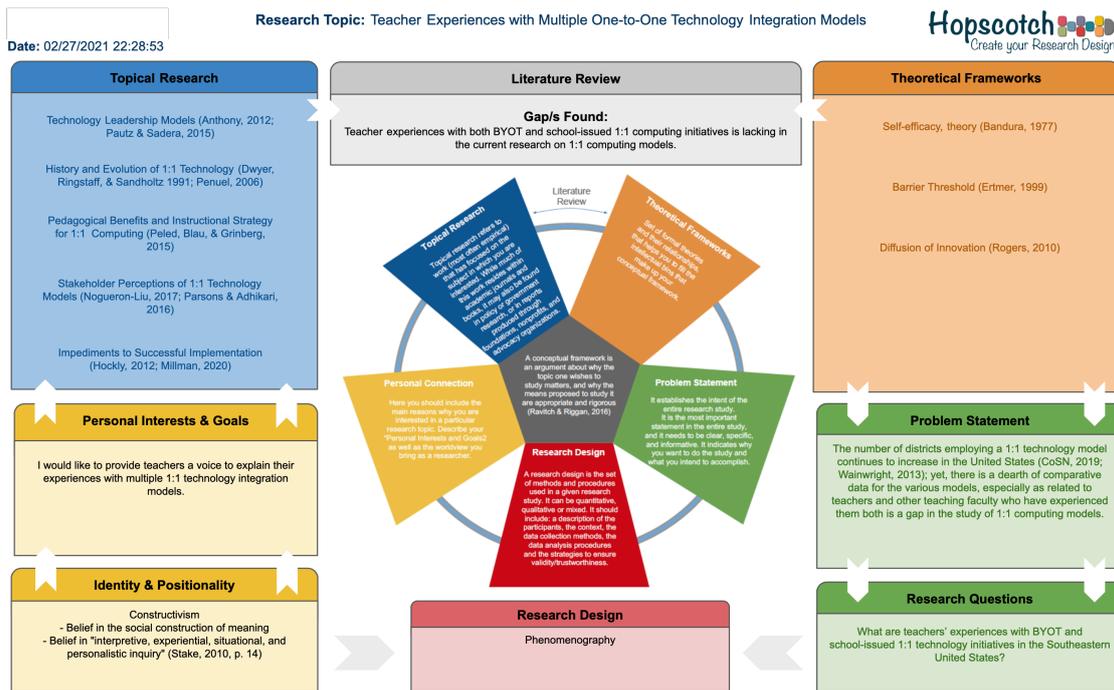


Figure 7. Visual of the conceptual framework supporting the study conducted by (Post, 2021, pp.12)

During a three-hour session in the lab, students are asked to summarize the work done in the initial ten weeks of the course by utilizing a tool developed within the Hopscotch framework. The tool¹⁷ helps students generate a visual representation of the key components of the conceptual framework supporting the research studies for their doctoral dissertations. Figure 7 shows the visual representation of the elements of the conceptual framework supporting a study conducted by (Post, 2021) that was originally generated at the IRML. It's author, a former doctoral student included the visual in chapter one of her dissertation. The fact that the visual was included in the final dissertation, constitutes evidence of the thorough work that doctoral student are encouraged to do when participating in sessions at the IRML. Moreover, the conceptual framework used as example in this section supported an innovative phenomenographic study to examine the beliefs and perceptions of teachers who have experience with both the Bring your Own Technology (BYOT) and school-issued 1:1 technology integration models. The findings emerging out of the study are currently being used by the school district of the author, to better adapt their technology integration models to the needs as demands of teachers.

In addition to the development of lesson plans for doctoral students who are in-service teachers, members of the IRML developed in Spring 2021 Hopscotch 4-Teachers (Jorrín-Abellán, 2021). It is an adaptation of Hopscotch that provides teachers with a tool to assist them in designing a thorough inquiry process to promote the systematic collection, analysis, examination, and interpretation of data to inform the implementation of innovations. The tool offers teachers a number of multimedia resources to guide them in the interactive development of a research-based plan to asses if what they are doing in their daily practice works.

Both the *ad-hoc* lesson plans developed for doctoral students who are in-service teachers, and Hopscotch 4-Teachers are initiatives contributing the the promotion of of educational change from the standpoint of methodological equity.

¹⁷ <https://hopscotchmodel.com/conceptual-framework/>

Finally, the IRML also facilitates the promotion of educational change by teaching SoTL research to Higher education faculty. Hopscotch 4-SoTL (Jorrín-Abellán & Steiner, 2021), is an open-access framework that guides the generation of well-informed Scholarship of Teaching and Learning (SoTL) (Poole, 2013) studies. It was developed during the summer of 2021 in collaboration with KSU's Center for Excellence in Teaching and Learning in order to provide open-access support for faculty conducting SoTL projects. The tool, understands SoTL as systematic inquiry into student learning and/or one's own teaching practices in higher education which is situated in context and involves methodologically sound application of appropriate research methods, peer review, and distribution as scholarly work. By its nature, SoTL is a rich and diverse space, where unique perspectives and disciplinary leanings are welcomed. Moreover, it is a field devoted to the promotion of innovative ways of teaching in higher education, which in the end has a direct impact on students (including the educators of tomorrow). Although recently developed, the tool has already being used in a number of venues and workshops including the Scholarship of Teaching and Learning Summit (2021) in which we delivered a workshop titled "Playing Hopscotch to Generate Well-Informed SoTL Research Designs" (Jorrín-Abellán, 2021b). This plenary workshop was attended by over 115 SoTL professionals from all over the US, which shows evidence of the expectation that the tool is already generating. In this sense, we are currently involved in a grant¹⁸ in which we are assessing the quality of the tool based on its usage by 50 experts in the field, that will allow us the development of an enhanced 2.0 version of the tool.

6. Conclusions and Future Work

In this paper we have presented and discussed the role that the Interactive Research Methods Lab, an innovative space that challenges the traditional approaches to teaching and learning research methods, is having in the promotion of educational change based on a methodological equity approach.

In addition to describing the personal journey and the "aha" moments that led to the creation of this innovative hub, the paper also provides a thorough description of the physical and virtual components of the IRML. Moreover, in the final two sections we propose the theoretical basis supporting the work that is being promoted at the lab, as well as the different sets of initiatives that exemplify the types of educational change currently pursued by the team behind the lab.

The work that we have presented aims at disseminating the impact that research centers and institutes in education can have in the democratization of research contents and practices that have been traditionally owned by institutions in higher education. We have shared actions and initiatives that are already having an impact in our schooling systems. They are intended to assist current and future teachers in the development of a strong inquiry culture that could be central in setting the steps necessary for them to become active vanguard agents of change. Moreover, the initiatives that are facilitated by the IRML can become part of an empowering emancipatory PD model to better train teachers in the use of open access methodologically equitable tools that allow them to promote informed change.

¹⁸ Usefulness of Hopscotch 4-SoTL: An open-source framework and web tool for generating well-informed research designs. Funded by the Education Economics Center (2022-23)

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