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Hopscotch 2.0: an enhanced version of the Model for the Generation of Research Designs in Social Sciences and Education

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Hopscotch 2.0: an enhanced version of the Model for the Generation of Research Designs in Social Sciences and Education

Abstract

The development of educational research designs might be daunting for novice researchers that have to make choices among the plethora of philosophical frameworks, research traditions, and different methods existing in the field. In this article we describe the process followed to formally evaluate Hopscotch, a model and a web-tool created by the author in 2015 to help novice researchers in the generation of solid and well-informed qualitative research designs. To do so, a responsive evaluation based on case study methods was conducted. The obtained results led us build a new 2.0 version of the Hopscotch's web-tool overcoming the limitations identified by the users of the initial version launched in 2015. Among others, the web-tool now offers the possibility of creating not only qualitative research designs, but also quantitative and mixed-methods designs. The system also allows for the collaboration and sharing of research designs among its users. It also provides the option of generating visual representations of the key components of six different types of qualitative research designs, four types of quantitative research designs, and four types of mixed-methods research designs. This newly developed tool based on the principles of Open Science, aims at helping novice researchers to deeply reflect on the research designs for their dissertations, research studies and even capstone projects.

Keywords

Hopscotch Model, Educational Research designs, Responsive evaluation, Open Science.

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Introduction

Education is central to the construction of a genuinely democratic society. Moreover, it is a universal right that aims at empowering individuals to reflect, make choices, and steer towards a better life. Teachers and school leaders are key actors in the reinvigoration of our democratic systems by inspiring and empowering our future leaders.

Some of the teachers and leaders interested in the betterment of their practices are enrolled in doctoral programs with the aim of learning the frameworks, tools and procedures needed to conduct research-based studies to illuminate their current practices and future curricular decisions. Given the uniqueness and transformative nature of the studies they want to conduct, many of them decide to get trained in qualitative research methods. However, they are often overwhelmed by the plethora of philosophical frameworks, research traditions, and methods existing within the field of qualitative research.

The complexity of designing qualitative studies in addition to its intrinsic interpretive nature, and the lack of research in the teaching of these particular research methods makes it especially difficult for teachers who are novice researchers, to find clear paths in the generation of well-informed qualitative research designs. In 2015 we developed Hopscotch (Jorrín-Abellán, 2016), a conceptual model and a web-tool to help teachers and leaders thoroughly design qualitative research studies. The model also included an easy to use web-tool (see: <http://hopscotchmodel.blogspot.com>) driving users through the design of qualitative research studies in a step-by-step fashion. The web-tool was based on a set of interactive forms using Google Scripts allowing the system to guide the user through the nine stages proposed by the model (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). The system provided the user with both textual and multimedia information within each step, with the aim of helping users make informed decisions within each of them. Once the user completes the steps, the tool automatically sends the research design to her email in pdf format.

Both the conceptual model and the web-tool have been abundantly used for the last three years, having impacted over eight hundred school teachers and leaders enrolled in doctoral programs in education, in seven universities all over the world. This extensive use has led us to evaluate if the model and the web-tool were of help for their users, if the steps and guiding materials proposed by the model were

helping novice researchers in the development of their research designs, and most importantly, the aspects to be enhanced or changed in Hopscotch to better serve its users.

The rest of the paper is organized around four main sections regarding the need for a model like Hopscotch, the detailed description of the conducted formal evaluation, its main findings and the changes implemented in the 2.0 version of the model, and a final section in which we address a number of considerations and future actions to keep on improving Hopscotch.

Need for a model like Hopscotch

The Hopscotch Model and its web-tool (Jorrín-Abellán, 2016) were developed in 2015 as a teaching resource to help graduate students in the process of designing qualitative research studies.

The model was initially proposed as a response to my personal experience teaching graduate courses, as well as a response to a gap identified in the field of qualitative research regarding the lack of models and guiding frameworks to comprehensively learn these particular research methods (Hammersley, 2004). Literature suggests that even though qualitative research is profusely used in social sciences and education (Denzin & Lincoln, 2011), and that there has been an increase in projects based on qualitative methods contributing to an abundance of publications dedicated to qualitative research (Hazzan & Nutov, 2014); little attention has been given on the contrary, to issues concerning the teaching and learning of this particular form of research (Günter, 2008).

Recent studies in the field of teaching and learning qualitative research (Breuer & Schreier, 2007), (Günter, 2008), (Hammersley, 2004) underscore the need for new models and guiding frameworks to help the learning of the challenging nature of the nuances in this practice (Hazzan & Nutov, 2014). Breuer & Schreier (2017) for instance, suggest the need of teaching qualitative research blending the two main approaches to teaching it, the paradigmatic and the pragmatic. For the paradigmatic approach, the process of learning research methods is understood as a craft to be practiced together by a "master" and an "apprentice." On the contrary, the pragmatic approach understands qualitative research methods as techniques that can be applied in the sense of recipes, with specific steps to be carried out. Both approaches have strengths and drawbacks

The Hopscotch model was created as an effort to integrate both approaches, thus providing a tool to help novice researchers generate philosophically-sound and

practice-oriented qualitative research designs while learning in collaboration with others. The approach proposed by Hopscotch helps minimize the drawbacks of the paradigmatic approach (i.e. time required for the master-apprentice learning; learning only the research tradition in which the master is an expert) and the pragmatic one (i.e. lack of reflection), while maximizing their potential (i.e. learning in collaboration with others while connecting theory and practice).

In order to help bridge the gap between both approaches to the teaching and learning of research methods, the model and the web-tool were developed under an *Attribution-Non-Commercial-ShareAlike 3.0 open source* license. This contributes to the general philosophical approach behind Hopscotch, that of promoting the democratic and collaborative use of research, which is in clear alignment with the Open Science (European Commission, 2016) movement. The FOSTER Project (FOSTER Project, 2018) defines Open Science as “an umbrella term that involves various movements aiming to remove the barriers for sharing any kind of output, resources, methods or tools, at any stage of the research process. As such, open access to publications, open research data, open source software, open collaboration, open peer review, open notebooks, open educational resources, open monographs, citizen science, or research crowdfunding, fall into the boundaries of Open Science.”

Therefore, Hopscotch can be seen as an Open Science initiative since it offers a suite of open tools to help novice researchers develop research designs in a collaborative fashion. The open and collaborative nature of Hopscotch is intended to help students develop solid research designs based on the expertise of researchers who have devoted their lives to a particular research tradition and/or topic (i.e. the model promotes reflection by offering examples and lessons learned coming from experts), at the same time that offers a set of practical steps and procedures to be followed when developing a research design.

Evaluation of Hopscotch 1.0: A responsive approach

In 2017, with the support of an institutional grant¹, we conducted a formal evaluation of the Hopscotch model entitled "Evaluating and refining the Hopscotch Model and supporting web-tool." To do so, we implemented a responsive evaluative case study trying to illuminate if the Hopscotch Model was helping the teaching and learning of qualitative research methods while bridging the pragmatic and paradigmatic approaches.

Responsive evaluation (Stake, 2003) is framed within what Guba and Lincoln (1989) have called the “Fourth generation of evaluation”. In this approach,

evaluators respond to participants' needs instead of measuring, describing, or even judging them. Hence, the evaluation we conducted was oriented to the activity, the social context, the experience of the users of the model, and the uniqueness of our evaluand, the Hopscotch.

An evaluative case study was selected as the guiding research tradition for a number of reasons: a) this form of research is ideal to reach a deep understanding of a bounded system in action. The bounded system in our study was the Hopscotch Model and its web-tool; b) this research tradition is well known in the field of qualitative research, and it includes clear methods and strategies to conduct it. Within the multiple existing approaches to case studies (Yazan, 2015) we followed Stake's (2005), as it aligns well with the constructivist worldview of the researcher; c) we also chose this particular research tradition since the researcher has extensive experience in conducting 15 years of case studies.

Figure 1 summarizes the key components of the conducted evaluative study. In the lower hexagonal side we find the two issues driving the study: a) Is the Hopscotch Model helping the teaching and learning of qualitative research methods?, and; b) In which ways should the Hopscotch Model and web-tool be modified/enhanced to respond to the needs of its users?

In order to illuminate the previous two tensions, we purposefully sampled (Palys, 2008) 86 users of the Hopscotch model. We interviewed 15 professors that had used the model in their own teaching (5 within our institution, and 10 international faculty), surveyed 70 doctoral students at our institution who had formally used the model within a doctoral course, and six online users of the model who agreed to fill out an online questionnaire after having used the web-tool.

In addition to the interviews and surveys, and with the aim of analyzing the usage of the Hopscotch's web-tool, we also employed Google Analytics, which was embedded within the Blogger website supporting Hopscotch². Google Analytics automatically gathered data regarding the number of page views, audience visiting and using Hopscotch, as well as the countries of origin of the users (see figure 2).

With regard to the particular qualitative strategies we implemented to guarantee the trustworthiness of the study, we conducted an anticipated data reduction strategy (Miles & Huberman, 1994) that helped us narrow down the complexity of the issues driving the study. We also selected our informants using criterion purposeful sampling (Palys, 2008). Moreover, we analyzed the data gathered using Atlas.ti (2017) which facilitated open, axial and selective coding, contributing to the triangulation of data.

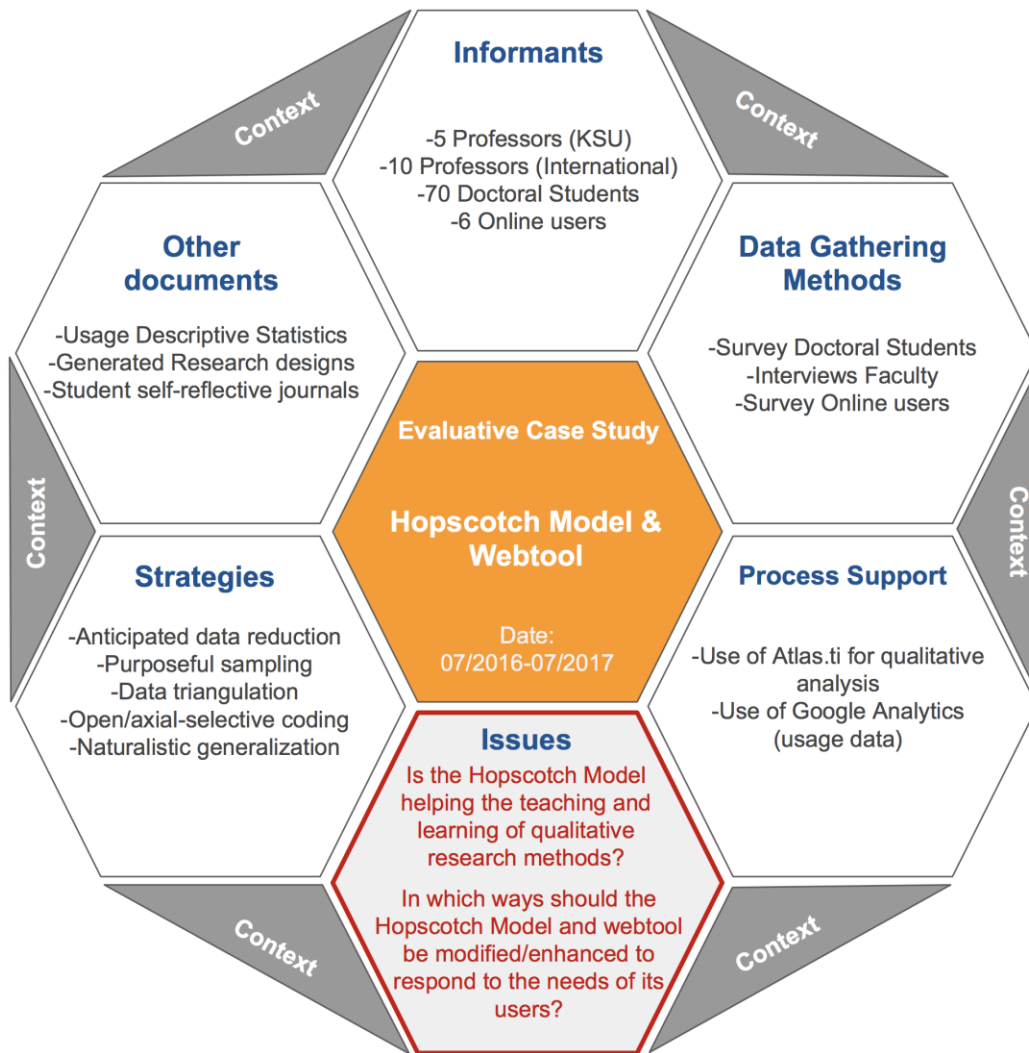


Figure 1. Components of the Evaluation Design

Findings of the evaluation

The main findings of the evaluation process can be divided into three different aspects: usage of the model and its web-tool; identified strengths, and; identified limitations of the Model and its web-tool. The following sub-sections elaborate on these aspects by providing evidences coming from the data analysis process.

Usage of the Model and Web-tool. As depicted in figure 2, Hopscotch has been profusely used since it was launched in January 2015. It has been formally used (within research courses) by more than 800 doctoral students in nine universities in Spain, the United States, Colombia and Thailand. In particular, its web-tool has been used by faculty as a teaching resource in: three graduate courses on research methods at Kennesaw State University (USA); six graduate courses on qualitative research methods at the universities of the Basque Country (Spain), Cádiz (Spain), Complutense de Madrid (Spain), Valladolid (Spain), Burgos (Spain) and Silpakorn (Thailand); as well as in an undergraduate course at the University of Valladolid (Spain). Table 1 summarizes the use that has been given to Hopscotch in each of the previous courses. The adoption of the proposed model in these ten courses constitutes good evidence of its teaching usefulness, as we will see in the next sub-section. Moreover, Hopscotch has also been used as the methodological basis in nine doctoral dissertations (Méndez-Romero, 2015) (Prieto-Pariente, 2016) (Vitala, 2016) (Booker, 2016) (Holmes, 2017) (Jones, 2017) (Bishop, 2018) (Daws, 2018) (Fernández-Faúndez, 2018), one master dissertation (Chumacero-Moscoso, 2018), and two published research articles (Lopera-Pérez, 2017) (Ruíz-Calleja et al., 2017). These works constitute proof of the methodological robustness of the Hopscotch Model.

Table 1
Use given to Hopscotch in nine different courses

University	Course	Type	Use given to Hopscotch
Kennesaw State University (USA)	Applied Quantitative & Qualitative Research (EDRS 8000)	Graduate	Qualitative module in the course driven by the steps proposed by the model. Students are asked to fill out a pdf-based version of the Hopscotch.
Kennesaw State University (USA)	Advanced Qualitative Research Methods (EDRS 9100)	Graduate	The 15 modules of the course are organized around the steps proposed by hopscotch. Students are asked to submit a research proposal following the 9 steps of Hopscotch.
Kennesaw State University (USA)	Conceptual Frameworks and Research Design (EDRS 9000)	Graduate	9 modules out of 11 are organized around the 9 steps proposed by hopscotch. Students are asked to use the sub-tool to generate a visual

			representation of their designs.
Universidad Complutense de Madrid (Spain)	Research and Innovation in Education	Graduate	Students are asked to use the Hopscotch's web-tool to generate their applied qualitative designs.
Universidad de Valladolid (Spain)	Qualitative Research Methods in Social Sciences	Undergraduate	Students are asked to use the Hopscotch's web-tool to generate their applied qualitative designs.
Universidad de Valladolid (Spain)	Data Analysis and Data Processing in Qualitative Research	Graduate	Students are asked to use the Hopscotch's web-tool to generate their applied qualitative designs.
Universidad del País Vasco (Spain)	Life-stories in Educational Research	Graduate	Hopscotch is presented as a tool to help generate qualitative research designs.
Universidad de Cádiz (Spain)	Qualitative research methods	Graduate	Hopscotch is presented as a tool to help generate qualitative research designs
Universidad de Burgos (Spain)	Innovation mediated by ICT: Research Challenges	Graduate	Hopscotch is presented as a tool to help generate research designs
Silpakorn University (Thailand)	Research methods in Educational Research.	Graduate	A module is dedicated to the Hopscotch Model

In addition, the Hopscotch's web-tool has received more than 16,000 visits from users in 72 countries, and over 700 qualitative research designs have been generated since its creation (see Figure 2).

Previous evidences underscore that the Model has been generously used for the last three years, which can be seen as initial proof of its acceptance by the community of faculty and doctoral students involved in qualitative research teaching and learning processes. However useful, these data do not show the reasons why the model has been used. We address this issue in the following subsections.

Strengths of the Model and Web-tool. The analysis of the interviews of the faculty who participated in the study reveal that they value very positively the guidance provided by the model to generate organized and well-informed qualitative research designs. They highlight the capacity the model has to help graduate students develop their qualitative research designs in a holistic manner, thus helping them understand the components and complexities of this particular form of research. They also value the model’s capacity to help faculty organize their methods courses. With regard to the model’s web-tool, they clearly value its simplicity of use as well as the clarity of the multimedia materials included in the web to guide students through the process.



Figure 2: Summary of Hopscotch’s analytics

One of the interviewed faculty at KSU, with over six years of experience teaching graduate courses on research methods, said with this regard that “[...] the model is a great qualitative research support tool. It is a fantastic way to introduce novice qualitative researchers to this field and help them gain familiarity with the basic tenets of qualitative research design.” In the same manner, a seasoned international faculty from the *Universidad de Valladolid* (Spain) with more than

twenty years of experience, mentioned that “[...] the first time that I used Hopscotch I realized that it was a wonderful tool to help graduate students in thinking more deeply in the complex decisions they have to make to develop their qualitative research designs.” Another faculty from the *Universidad del País Vasco* (Spain) with over ten years of experience teaching research methods courses, said that “[...] as a researcher I see the Hopscotch Model tool as an opportunity to share my research designs with other partners in an easy and understandable way.

Moreover, as a professor I understand the model as a powerful teaching tool to help my students make better and well-informed decisions during the research design process.” A junior faculty from the *Universidad del Rosario* (Colombia), with two years of teaching experience, who happened to use Hopscotch for his own dissertation, also mentioned that “[...] the model is useful because it gives the necessary clarity for the understanding of the methodological design of a qualitative study. It is a navigation route that no sailor can ignore [...] regarding the web-tool, I have used the supporting materials on the website, and they were very useful because they are well-classified, and also include excellent bibliographical references.” It is worth noting the reflection made by another international faculty from *Universidad Complutense de Madrid* (Spain), who has been teaching quantitative research methods courses for the last six years, since she analyzes the benefits of using Hopscotch both for her and for her students. She says, “[...] the model is very useful for my students because of its systematicity. It forces students to consider the questions and answers necessary to develop a coherent research design. [...] it is also helpful for me. It has helped me organize the contents of my courses in an organic, interactive and procedural way, which is essential in the teaching of research methods.”

In the same way, graduate students who participated in the study also valued the detailed guidance provided by the model to organize their qualitative research designs. Moreover, they also valued the structure of the graduate courses they have taken in which the Hopscotch model was used to develop them. A student enrolled in an Education Leadership doctorate for three years, who recently took *EDRS 9100: Advanced Qualitative Research*, mentioned with this regard that “[...] the model seemed to put all the pieces together in the right location. Prior to the Hopscotch Model, I struggled to identify, list, and design the process I would use to complete my case study. The Hopscotch Model made the process so much easier.” Another student who just finalized *EDRS 8000: Applied Quantitative & Qualitative methods*, mentioned that “[...] I found the class very structured, which helped me to better understand qualitative research, which is so different from the quantitative one, and actually much harder from all points of view such as, for example, to find and understand the right lenses and the underpinning

epistemological stance.” Finally, a graduate student who was about to defend her dissertation, shared that “[...] hopscotch is a guide that helped me maneuver through the research process. I value it highly since I have conducted a qualitative case study.”

Online users of the model have also stressed the simplicity and clarity of the web-tool, as well as the textual and multimedia resources offered in each of the steps of the model. One of the online users, who was at the time enrolled in a graduate program, stated that “[...] the model is linear, clear and easy to follow. The embedded videos and explanations are fantastic resources for novice qualitative researchers but also prove salient for experienced researchers as a system of qualitative checks and balances for integral alignment among one’s positionality (worldview), conceptual framework, and methodology (research tradition). This model proved to be a very useful tool in all of these respects for helping me define my research interests, intentions, and goals more cleanly and more clearly.” Moreover, a second online user also mentioned that he had liked “[...] the easiness of use of the web, it’s clear structure, and the explanations and resources provided within each step.”

Limitations of the Model and Web-tool. The interviewed and surveyed users of Hopscotch, either faculty, graduate students, and online users not only stressed the strengths of the model but also identified a number of limitations and aspects to be enhanced. They are the following: a) Need to refine the textual multimedia information provided by the web-tool in some of its the steps; b) Need to incorporate itineraries to help users in the design of quantitative and mixed-methods research designs; c) Need to include in the web-tool a sub-tool to help the generation of graphical representations of qualitative research designs, based on the particular research tradition selected; d) Users have also identified the need for the web-tool to include collaborative spaces for the discussion of the research designs generated, and finally; e) some international users requested a Spanish version of the model and the web-tool.

An experienced faculty from *Universidad de Cádiz* (Spain), who has 27 years of experience teaching research methods, and who is also a well-known author in the field of research methods in Spanish-speaking countries, mentioned in the interview that “[...] the only aspect I would enhance in the web-tool has to do with its interactivity. I would incorporate more multimedia information.” With this same regard, a faculty from the *Universidad de Valladolid* (Spain) also mentioned that “[...] I would enhance the information provided in some of the steps of the model like in the data gathering and data analysis ones.” A professor from

the *Universidad del País Vasco* (Spain) with more than ten years of experience teaching research methods courses, also stated the need for the model to incorporate more multimedia information.

With regard to the second limitation, a number of informants suggested that it would be significantly helpful if the model could also help the development of quantitative and mixed methods designs. A colleague at KSU mentioned that “[...] it is probably not a limitation of the model, but it would be so helpful if it could also offer the possibility of creating quantitative and mixed-methods designs [...]”. Another faculty from *Universidad del Rosario* (Colombia) also suggested that “[...] it would be super helpful if you could develop a new itinerary to help students create quantitative research designs.” In regards with the third limitation identified in the evaluation, some students mentioned that it would be helpful if the tool could help them create visual representations of their research designs, in alignment with one of the assignments in both EDRS 9000 and EDRS 9100, in which students are asked to graphically represent their research designs as a resource to promote reflection and discussion. In this same regard, a student in EDRS 9100 mentioned in the conducted survey that “[...] one of the assignments that helped me the most was the one in which you requested a visual representation of my phenomenological study. It would be cool if the model could help us do that for every of the research traditions studied in the class.”

Concerning the fourth limitation, a young faculty from the *Universidad de Valladolid* (Spain) with four years of experience teaching qualitative research suggested that “[...] one of the things I miss in Hopscotch is an organized repository of the research designs generated using it. It would be helpful for my students to have access to some examples.” Finally, many of the Spanish-speaking users of the model, also suggested that it would be more than helpful to have a Spanish version of both the model and the web-tool.

The findings and evidences presented in this section helped us illuminate the two central issues driving the evaluation process. Data shows that the model has been helpful for faculty teaching research methods, as well as for students taking them. Moreover, the evaluation process also helped us identify five key limitations which became the starting point for the production of an enhanced 2.0 version of the Hopscotch, as it is described in the following section.

Hopscotch 2.0: Implemented enhancements

In light of the strengths and limitations found in the conducted evaluation, we initiated the process of enhancing the initial version of Hopscotch, which was

launched in January of 2015, with the aim of giving answer to the requests made by its users. The very first aspect we studied was the possibility of migrating the whole system that was originally hosted in Blogger, to a more powerful platform that would allow us to give answer to the limitations and drawbacks presented in the previous section. To do so we conducted a lite analysis of the main features of five well-known open source content management systems: *Wordpress*, *Joomla*, *Drupal*, *Concrete 5*, and *Get Simple*. We conducted a usability test around the ten categories displayed in figure 2. As a result of the process, we decided to develop the 2.0 version of Hopscotch over *Wordpress*, because of its easiness to use and flexibility. After installing *Wordpress* and acquiring a new domain, we revisited the textual and multimedia information (in response to the 1st limitation identified) provided in each of the nine steps conforming the model. Moreover, we also developed two new itineraries to help users generate quantitative and mixed-methods designs (in response to the 2nd limitation identified). The process took us over a year, and we counted with the inestimable help of an expert in quantitative research from the *Universidad Complutense de Madrid*, and a graduate librarian from Kennesaw State University. In collaboration with them, we were not only able to generate the aforementioned two new interactive itineraries, but also to offer meaningful information and resources to guide users through the steps conforming them.

Table 2
Comparison of five Open-source Content Management Systems

Feaures	Wordpress	Joomla	Drupal	Concrete 5	Get Simple
Easiness to use	✓				✓
Easiness to add textual content	✓	✓	✓	✓	✓
Easiness to add media content	✓				
Easiness to maintain	✓	✓	✓	✓	✓
Availability of visual templates	✓	✓		✓	

Allows collaboration	✓	✓	✓		✓
Allows static pages	✓		✓	✓	✓
Allows post-like pages	✓	✓	✓	✓	✓
Requires technical knowledge to set		✓	✓	✓	✓
Open-source	✓	✓	✓	✓	✓

In addition, and as a complement to the three itineraries, we also developed a sub-tool³, based on Google Scripts and the Form Publisher add on, with the aim of helping students in the generation of visual representations of their research designs (in response to 3rd limitation identified). The enhanced 2.0 version of Hopscotch, now allows users to create visual representations of six different types of qualitative research designs (Narrative Inquiry; Phenomenological Studies; Ethnographical Studies; Grounded Theory; Case Study, and; Action Research), four types of quantitative research designs (Descriptive non-experimental designs; Correlational designs; Quasi-experimental designs, and; Experimental designs), and four types of mixed-methods research designs (Concurrent mixed-methods design; Sequential Explanatory mixed-methods design; Sequential Exploratory mixed-methods design, and; Embedded mixed-methods design).

In response to the fourth limitation, we also developed a set of three collaborative spaces⁴ within the system, allowing users to share and discuss the research designs generated using Hopscotch. This added a very much needed collaborative capability to the system, as highlighted by some of the interviewed informants. Finally, in response to the fifth identified limitation of Hopscotch, we develop the whole system both in English and in Spanish, thus facilitating the use of the model in Spanish-speaking countries. The newly 2.0 version of Hopscotch is accessible at: <http://hopscotchmodel.com>

Final considerations and Future Work

In this article we have described the formal evaluation of the Hopscotch Model, conducted over a year with the aim of illuminating the usage of the model, as well as its strengths and limitations. The model and its web-tool have been copiously used in the last three years as evidenced by the data provided in previous sections. Moreover, the five key limitations identified by users of the Hopscotch, have helped us developed an enhanced 2.0 bilingual version that now incorporates better textual and multimedia information, two new itineraries to help users develop quantitative and qualitative research designs, a sub-tool to help the generation of visual representations of fourteen different types of research designs, as well as three collaborative spaces that allow the sharing and discussion of the research designs generated by users.

As a part of the future work, we are planning to conduct a second evaluation cycle of the 2.0 version of Hopscotch which will help its continuous improvement. Moreover, we are working in the generation of a 3.0 version of Hopscotch, incorporating semantic knowledge and artificial intelligence to offer novice researchers (teachers and leaders interested in the betterment of their practices), an intelligent tutor to guide them through the steps conforming Hopscotch.

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Footnotes

¹ Evaluating and Refining the Hopscotch Model and Supporting Web-tool: a Model to bridge paradigmatic and pragmatic approaches to teaching and learning qualitative research methods in graduate research courses. Kennesaw State University. FY 17 OVPR Pilot/Seed Grant. 07/2016-07/2017. \$8,282.

² <http://hopscotchmodel.blogspot.com>

³ The sub-tool to generate visual representations is available at: <http://hopscotchmodel.com/visual-representation/>

⁴ The newly developed collaborative spaces can be accessed at: <http://hopscotchmodel.com/grupos>