GOGIRLS: EVALUATION AND TESTING OF THE GENDER EQUALITY SITE INTEGRATED WITH GOOGLE DRIVE

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Abstract

This work presents the GoGirls project, which addresses gender equity together with digital literacy. The objective is to contribute to the empowerment of teenagers in high school, in extension actions, through workshops with activities using Web 2.0 tools. The GoGirls website is built within the concept of Learning Objects (LOs), thus constituting a digital tool to support education. The site was submitted to a usability test by potential LO applicators and also evaluation of the teaching-learning potential in an instructional context.

Keywords: gender equity, digital literacy, Google Drive, girls in computing, equity in computing.

GOGIRLS: EVALUACIÓN Y PRUEBAS DEL SITIO DE IGUALDAD DE GÉNERO INTEGRADO CON GOOGLE DRIVE

Resumen

Este trabajo presenta el proyecto GoGirls, que aborda la equidad de género junto con la alfabetización digital. El objetivo es contribuir al empoderamiento de niñas y niños en la escuela primaria, en acciones de extensión, a través de talleres con actividades utilizando herramientas Web 2.0. El sitio web de GoGirls está construido dentro del concepto de Objetos de Aprendizaje (OA), por lo que constituye una herramienta digital para apoyar la educación. El sitio fue sometido a una prueba de usabilidad por posibles aplicadores de OA y también a una evaluación del potencial de enseñanza-aprendizaje en un contexto de instrucción.

Palabras clave: equidad de género, alfabetización digital, Google Drive, chicas en informática, equidad en informática.

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0. INTRODUCTION

The United Nations (UN) has created an action plan with 17 Sustainable Development Goals (SDGs) to be achieved by 2030. Among the goals outlined, gender equality is included as the 5th goal, in particular, goal 5.b. stands out. "Increase the use of basic technologies, in particular information and communication technologies, to promote women's empowerment" ("Achieve gender equality and empower all women and girls").

In the Brazilian scenario, the Brazilian Computer Society (SBC) promotes the Digital Girls program, created in 2011, whose mission is: "To awaken the interest of girls to follow a career in Information Technology and Communication" (Programa Meninas Digitais).

Together, these organizations, UN and SBC, converge to expand the discussion of gender equality, contributing to the recharacterization of inequalities through the use of information and communication technologies.

In this context, to contribute to the transformation of this situation, the project Heroínas Digitais (in English: Digital Heroines) offers workshops using web 2.0 tools for primary school girls, to increase the representation of women in the area of science and technology, as well as to stimulate reflection on gender equity in society (Lopes and Odakura, *Heroínas*). The project is a partner of SBC's Digital Girls program (Maciel 327), and is also aligned with target 5.b of the UN's 5 SDGs.

The work of Lopes and Odakura aimed to build a website, called GoGirls, containing Learning Objects (LOs), for knowledge of web 2.0 tools, seeking digital literacy combined with interactive activities on gender equity and an assessment by potential applicators of the practices (*GoGirls* 69). As part of the actions of the Heroínas Digitais project, and as an extension of the work of Lopes and Odakura, this work proposes an evaluation of the activities of the GoGirls website in the instructional context.

The paper is divided as follows: section 1 describes the theoretical basis; section 2 presents the related works; section 3 exposes the applied methodology; section 4 describes the development of the website and other learning objects used; section 5 discusses the results, section 6 presents the discussion about results, and finally the conclusion in section 7.

1. THEORETICAL FOUNDATION

According to Alves, "gender equity is essentially a human right issue. But it is also a question of the development of civilizing progress" (636). Thus, as the various actions that guide the process of recharacterization of gender inequalities

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for an equal society, such as the fifth objective of the UN and the Digital Girls program, this work is also an action that contributes to this conception.

Concerning gender equity and Information and Communication Technologies (ICTs), the work was guided by the goals, 5.b and 5.5 of UN SDG5, which describe, respectively: increasing the use of ICTs to promote women's empowerment and the need to create opportunities for women in leadership at all levels of decision-making ("Achieve gender equality and empower all women and girls").

The inequalities between men and women in Brazil can be seen from Gender Statistics, a social indicator made by the Brazilian Institute of Geography and Statistics (IBGE). The social indicators vary from different levels of occupation of women with small children, participation of women in computing graduations, occupation and unequal salaries in leadership positions, time dedicated to domestic chores, occupation in decision-making positions, etc. ("Estatísticas de Gênero: ocupação das mulheres é menor em lares com crianças de até três anos").

Digital literacy is considered in the Reference Curriculum in Technology and Computing as the ability to read, write and interpret information with the use of the computer and/or digital devices, allowing the development of sociocultural practices, as well as reflections, mediated by digital resources (Raabe, Brackmann and Campos). To enable the development of digital literacy, web 2.0 technology can be used, which has a set of characteristics that make the sites and services of the new generation of the Internet simple and easy to use, as pointed out by Machado (Machado 4-5).

In addition to supporting the learning process of this technology, digital resources are used that directly interfere with learning, called Learning Objects (LOs) (Braga 21). Examples of LOs are images, videos, hypertexts, simulations, software, among others, in instructional situations.

In this way, this work uses a website, called GoGirls, to organize gender equity activities together with the teaching of web 2.0 tools, in the form of LOs, which, in an integrated way, pursue digital literacy and girls' empowerment.

2. RELATED WORK

In the study of Marchão the goal was to promote gender equality for preschool children (572). The applied action research method allowed the development of the process adapted to the context in question. Thus, the authors claim that, based on knowledge of the concepts of gender equality in the environment, it was possible to adequately characterize some ideas associated with stereotypes.

Balieiro and collaborators describe that promoting the knowledge of digital tools and digitally including women through digital literacy, consequently makes them empowered (Balieiro et al. 169). The authors use the concept of digital literacy described by Soares, "a certain state or condition that acquires those who appropriate the new digital technology and exercise reading and writing practices on the screen" and thus relate digital literacy as a form of empowerment (145).

Araújo performs a study that aims to justify the convergence of the concept of digital literacy and the web 2.0, concluding with the argument of d'Andréa, that the joint use of these favors the formation of an individual able to position her/himself about the daily situations mediated by the computer (Araújo 1)(d'Andréa 5). Finally, Velloso and Marinho perform a record of the process of using a web 2.0 interface to provide digital literacy skills in a public school (1294).

The selected papers were important to outline the objective of this work. Thus, the present study brings together the interventional activities of gender equity in school, digital literacy through web 2.0 tools in high school, and through these, aiming to achieve female empowerment. All these aspects are gathered in a website in a linear way, containing learning objects for teaching web 2.0 tools and the activities to be performed with them.

3. METHODOLOGY

For the development of the GoGirls website and its LOs, the INTERA (Intelligence, Educational Technologies, and Accessible Resources) methodology, was considered appropriate, as it is based on software development processes and the ADDIE model for developing digital content used for learning, regardless of size, granularity, and complexity (Braga 29).

INTERA has 4 components: phases, roles, stages, and artifacts. The phases are defined by the delivery of part of the LO, usually sequentially, subdivided into initial, intermediate and transition. The roles refer to the description of people's functions (content designer, etc.) within the project. The artifacts are all types of data, from documents to source codes, generated in the development that contains information. And finally, the stages are a set of activities that are related temporally. The steps of the methodology are illustrated in Figure 1 and are subdivided into:

- Contextualization: performs the search for all necessary information for developing the LO, being defined the target audience, learning objective, teaching modality, application scenarios, etc.
- Requirements: a survey of expectations regarding the LO, and the technical and pedagogical characteristics.
- Architecture: from the requirements analysis it is generated the outline of the LO. At this stage, the technologies and standards suitable for development are also defined.
- Development: the LO and all reuse components, user guide, installation manual, etc. are developed. In addition, also, the copyright definition.
- Testing and quality: validation of technical characteristics and part of the pedagogical characteristics, and quality verification.
- Availability: the LO is made available with all the necessary access documents for its use. Usually, it is made available in a repository.
- Evaluation: the application of the LO in the instructional context for which it was developed, whose main objective is to evaluate learning.

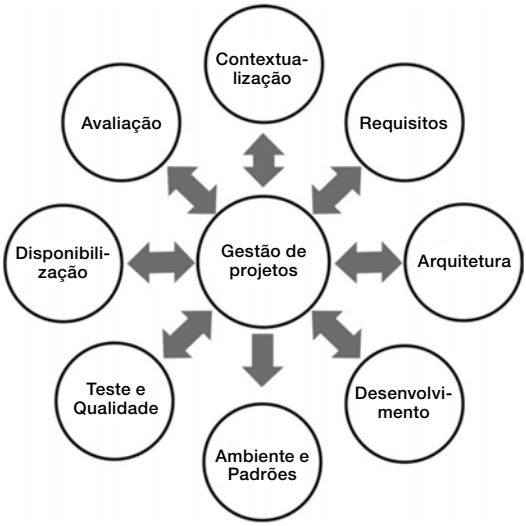

Figure 1. Stages of the INTERA methodology (Braga 32).

– Project management: coordinates and monitors the development of all stages, the costs involved, the people, and the established schedule.
– Environment and standards: control of the development environment of the LO.

Each step above is divided into 3 elements: inputs (information and/or artifacts), practices (techniques in the area of computing and/or education), and outputs (information and/or artifacts generated).

4. PRODUCTION

In this section, the development of the learning objects constituting the GoGirls website is described, considering the steps of the INTERA methodology: contextualization, requirements, architecture, development, testing and quality, availability, evaluation, project management, and environment and standards. The availability stage is integrated with the development stage. An, the last two stages, environment and standards, are described as part of the other stages.

4.1. Contextualization and Requirements

First, contextualization and requirements steps are performed. The development of this work is intended for participants of projects similar to the project Heroínas Digitais, which deal with gender in the classroom, partners or

not of the Digital Girls program of the SBC, with basic computer knowledge that allows the development and guidance of activities with a computer. Regarding the implementation of the work, we opted for an explanatory site that aims to assist implementers in their projects, which integrate the gender equality theme. This choice aims to allow the site not to require significant hardware requirements, being able to run on equipment without many resources available. In addition, to provide free access, favoring interaction and collaboration, Google Drive was adopted as a web 2.0 tool.

As part of the learning objectives and pedagogical techniques, an exploratory search was conducted for pedagogical materials that addressed the topic of gender equity or equality. Based on this search, the site was divided into three modules: vocational choices, representativeness in leadership and equity, and ICTs.

A second exploratory search was conducted in which consistent documents with well-defined pedagogical activities were located. Thus, the result of this search was the Guide of Citizenship and Gender 3rd cycle (Pinto et al. 155-261), a gender curriculum for high school students, prepared by the initiative Valente Não é Violento (Plano de aula 5 - estereótipos de gênero, carreiras e profissões: diferenças e desigualdades). This initiative is coordinated by UN Women (ONU Mulheres), which contributes with lesson plans on gender inequalities in society, whose objective of this study is to stimulate the change of attitudes and behaviors emphasizing the need to establish equality between women and men. Finally, the support booklet entitled *Gender Education in Childhood* ("Educação sobre Gênero na Infância: caderno de apoio do desafio da igualdade"), prepared by the initiative of *Plan International* (Plan Internacional Brasil), a non-governmental organization, focused on promoting gender equality. These materials were chosen because of their well-defined practices and adaptive possibility for activities using the computer to meet the learning objective of gender equity and digital literacy.

4.2. Architecture

After the definition of the contextualization and requirements, from the set of activities and plans of the pedagogical sources selected, the 06 activities were constituted, within the 03 corresponding modules, as described below:

Module 01- Vocational Choices: Use of Labels and Women in Society.
Module 02- Representativeness in Leadership: Career in the Labor Market and Leadership Skills.
Module 03- Equity and ICTs: Internet Security and Online Ads.

The GoGirls website, where the distribution of the learning objects is made, is built using WordPress version 5.5.4 with the Astra theme, and a set of free plugins.

To define the technical characteristics that correspond to the learning objectives regarding digital literacy, the google drive tool was chosen. The google drive has a set of tools which allow collaboration, with various functions: document

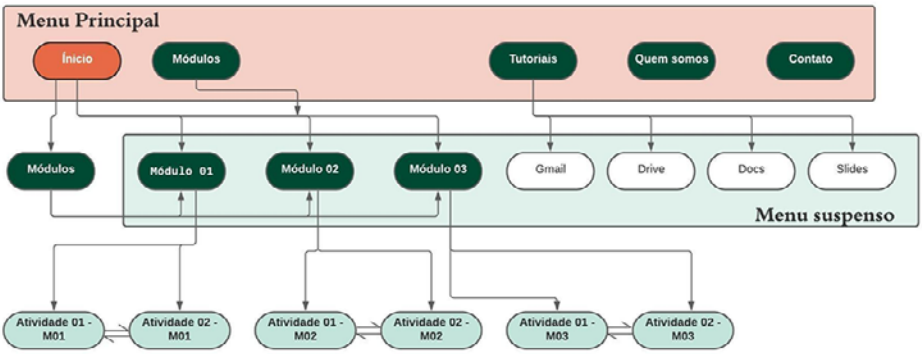

Figure 2. Navigation Map of the GoGirls website.

editor, presentation editor, forms, and others that support learning, in addition to cloud storage. The chosen tools from the set of google and google drive tools available were:

Google Gmail: free email service for communication via asynchronous messaging, among other integrated services. Through Gmail you can access Drive by creating an individual account.
Google Drive: 15 GD data storage, management, and sharing of files with various formats;
Google Documents: creates and edits text documents in the browser with automatic saving. The edition can be collaborative.
Google Presentations: creates and edits slide presentations. And it has the same possibility of collaborative editing and saving as editing documents.
Google Forms: create custom forms for surveys and questionnaires, with automatically generated data.

After the steps defined above, the Architecture step determined the types of LOs: hypertexts and videos, which are gathered and made available by the GoGirls website. The hypertexts correspond to the explanatory part of the themes, objectives, and activities. The videos are the explanation of the use of the tool and the activity related to the chosen themes about gender equity. In addition, it was defined the navigation map as shown in Figure 2.

4.3. Development

In the development stage, relevant adaptations were made based on lesson plan 05 of the Valente Não Violento initiative ("Plano de aula 5 - estereótipos de gênero, carreiras e profissões: diferenças e desigualdades"), activities from the

Figure 3. GoGirls website home screen.

GoGirls

Figure 4. Logotype created for the site.

Citizenship and Gender Guide 3rd Cycle (Pinto et al. 155-261) and also activities from the Plan International activity booklet *Plan International* (Plan Internacional Brasil). For each activity elaborated, the following fields were defined: name of the activity, objectives, tools, materials and suggested time. The activities are described in detail and support materials are available in videos, slides and documents. The description of how the activities should be conducted is divided into parts to facilitate communicability.

Figure 3 shows the *Home* page of the site, with some small explanatory hypertexts to introduce the topics covered and generate interest in the content. This *Home* page contains direct buttons to the activity modules and also to the *Modules* page, which has the conceptualization of gender equality and equity, a brief explanation of what the modules are, who they are for, and how to apply them.

In addition, a logotype was developed for the site as part of its visual identity, as shown in Figure 4. The menu contains the items: *Home*, *Modules*, *Tutorials*, *About Us*, and *Contact*. The item *Modules* has a drop-down menu with 3 items that lead to the other 3 pages of modules 1, 2, and 3. Similarly, the *Tutorials* item has

Figure 5. Representation of the Modules, exemplified by Module 01.

a drop-down item with tutorials 1, 2, 3, and 4, about Gmail, Drive, Documents, and Presentations, respectively.

For all modules, the same information and button layout was used, according to Figure 5, besides free illustrations from icons8.com. The footer contains the copyright of the page, the personal website address of the main author, the website address of the research group, from which the work originates, and the reference address of the illustrations used.

On the tutorial pages, the OBS studio (https://obsproject.com/pt-br/download) tool were used to record the explanatory videos, which were then uploaded to the YouTube streaming platform account of the research group.

On the *About Us* page, the Heroínas Digitais project is described, partner of the Digital Girls program of the SBC, which coordinates the GoGirls site, and part of Ponte group, to which the project belongs. The *Contact* page consists of a form with required fields: name, surname, e-mail, institution or company, subject and description.

The availability of the site is active at the domain: gogirls.ponteducacional.com.br.

4.4. Testing and Quality

In this stage, it was evaluated the technical characteristics of usability and content of the website. For such, it was prepared a form that brings together a set of 16 questions. In addition, there were 5 questions for identification of the evaluators and another 4 open-ended opinionated questions.

4.4.1. *Evaluation Usability*

To evaluate usability, 9 questions were included:

– If you have performed the tasks on both devices: the site is responsive, i.e. it suits different devices.
– The site has good readability, i.e. it is easy to read.
– No specific knowledge about any subject is required to use the site.
– I was able to find what I was looking for without difficulty.
– I was able to find a way of contact without difficulty.
– The site has a pleasant interface.
– The site is self-descriptive, meaning that the information contained informs the purpose of the site.
– The site presented normal behavior, without any unexpected behavior while performing any task.
– I felt satisfied in performing the tasks on the site.

For evaluation of usability issues, a set of tasks were listed to be performed from the provision of site access:

– Read the home page and then go to the 'Modules' page.
– From the 'Modules' page, go to activity 02 - Module 01.
– Access activity 01, from Module 03.
– From some activities, access some tutorials.
– Search for another tutorial.
– Read the 'About Us' page.
– Send us a message using the form on the 'Contact' page.
– If you have performed the tasks on a desktop/notebook, perform them again (if possible) on a smartphone/tablet.

4.4.2. *Evaluation Content*

To understand perspectives related to the content, 7 questions were composed:

– I know the 5th SDG (Sustainable Development Goal) - Gender equality.
– The work contributes to the gender equality objective of the 5th SDG.
– The chosen topics of the modules are relevant.
– The Format (Module, Activities and Tutorials) is consistent with the proposal of the site.
– The google content in tutorial form is relevant and necessary.
– I would use it in the project (Digital Girls Program partner) in which I participate.
– I would recommend the site to someone.

The open-ended opinionated questions, which aim to contribute to the improvement of the website, were:

– Have you ever known any similar work for the web? If yes, which one?
– Did you experience any difficulty in understanding what is being proposed in any activity? In case you did, which ones?
– Have you encountered any problems with the site? If so, please report it here.
– Let's get better! Suggestions for site improvement? Share them with us.

The online form was sent by email for SBC's Digital Girls program emailing list, which has the participation of people who are part of the projects throughout Brazil. We received 16 responses.

4.5. Application Evaluation

The application evaluation consists of applying the activities described on the website using support material that was developed based on them. The workshop took place in two days with 3 different groups, with 28 high school girls, aged 15 to 17, from a public school. The time with each group was 1 hour and 30 minutes, corresponding to the time of one activity in each module on the website, but for this workshop, it was decided to test the possibility of a module with two activities. The choice of the module and corresponding activities was based on the understanding that Gmail is a less complex activity, which would start the learning path about google tools. Aiming to analyze the previous knowledge about the subjects covered in the workshop, before the beginning of the workshops, forms, *pretest*, were applied to evaluate the familiarity with the tool used and the knowledge about the topics of gender equity. In the same way, the same forms were applied after the activities, *posttest*, to understand if knowledge and perceptions changed with the proposed activities. In addition, in the first activity of module 01, a reflection on a text without prior information on the topics that would be covered in the workshop is started, to understand the unconscious biases.

5. RESULTS

5.1. Results: Testing and Quality

The results correspond to the testing stage and have the purpose of validating the technical characteristics and part of the content characteristics. Thus, an online form was developed with an evaluation of the questions contained through the Likert scale from 1 to 5 in agreement, being 1, I totally disagree and 5, I totally agree, with exposed statements. The online form obtained a total of 16 responses. Of which 93,7% of respondents are linked to a Higher Education Institution and e 6,3% to an educational group. Regarding the role played, 43,8% are teachers and

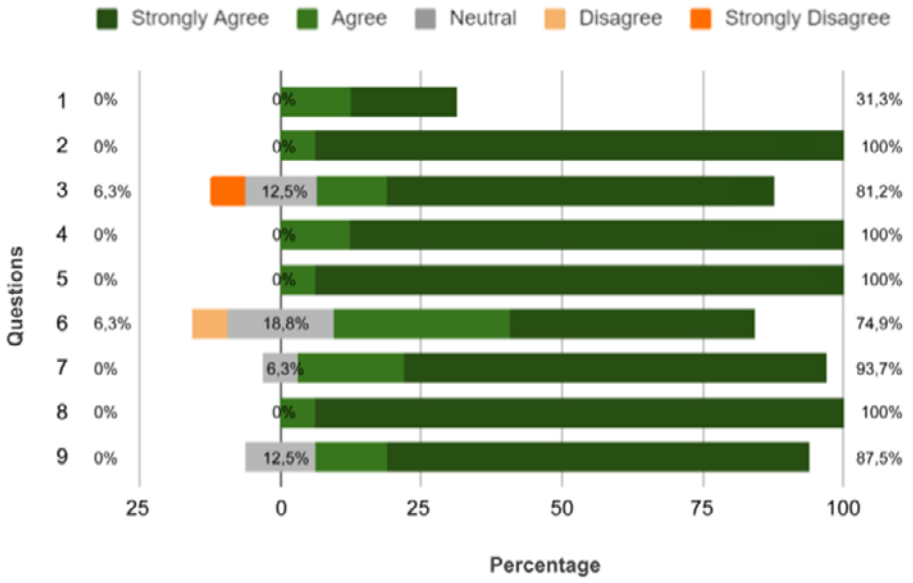

Figure 6. Result of the evaluation of the 9 questions associated with usability.

56,3% are students. Of these, 31,3% are part of a partner project of the Digital Girls program of SBC. In terms of geographical space of origin of the participants in Brazil, 43,8% were from the South region, 18,7% from the Southeast region, 12,5% for the Midwest and Northeast regions, respectively. In addition, 6,3% of the participants are from Spain, and the same percentage for an undefined location.

Figure 6 illustrates the responses associated with usability. It can be observed that 31.3% who used devices of different screen proportions, answered the first question about the responsiveness of the site with 100% agreement. In questions 2, 4, 5, and 8, about readability, ease, contact information, and expected behaviors, respectively, obtained 100% agreement. In questions 3, 6, 7, and 9, which correspond to specific knowledge, interface, description of information, and satisfaction, respectively, obtained 81.2%, 74.9%, 93.7%, and 87.5% of agreement and disagreement in 3 and 6, with 6.3% each. Thus, according to the answers provided by the participants, one can conclude that the website has adequate usability for use.

In Figure 7, whose representation is associated with the website content, in question 1, there was 62.5% of agreement regarding the knowledge of the 5th UN goal, gender equality, and 12.5% responded in disagreement with it. In questions 2 and 6, corresponding to the contribution of the work aligned to that objective of question 1 and on the potential use of the site, it was obtained 87.5% and 81.2%, respectively. About the coherence of the format in Module, activities, and tutorials, in question 4, it was obtained 100% of agreement. In questions 3, 5, and 7, about

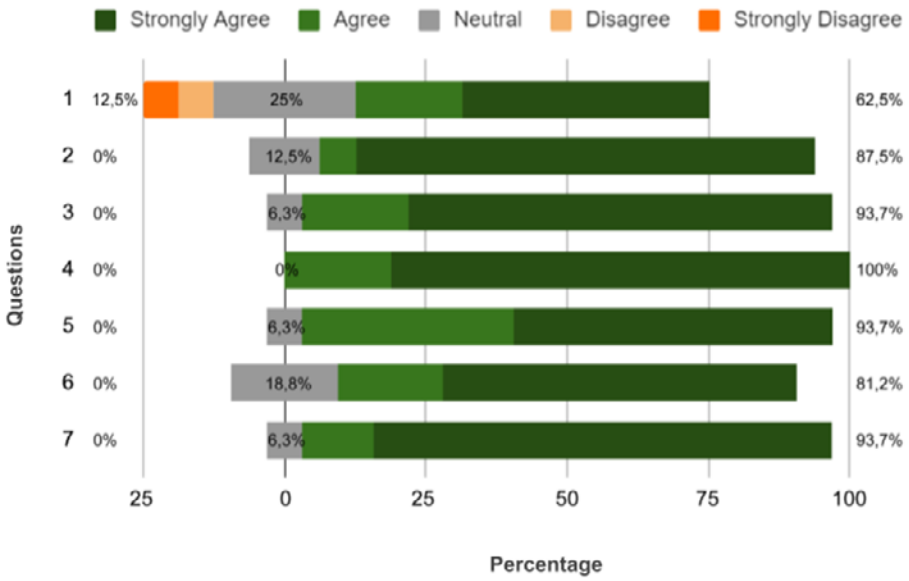

Figure 7. Result of the evaluation of the 7 questions associated with the content.

the relevance of the themes, tutorials in google video, and a potential indication of the site for other people, it was obtained an equal agreement of 93.7%, each, in the answers. Thus, it can be concluded that from the participants' answers, the content has positive relevance.

Question 6 about the use, in partner projects, of the Digital Girls program that the participants of the questionnaire participated in, the percentage of agreement (in green on the graph), does not correspond to the percentage of participants who said they participate in partner projects, 31.3%. Thus, hypothetically, the responses in agreement in question 6 may be associated with the use of the site in any projects, not necessarily partners, or the future use in any other projects.

In the responses of open-ended opinionated questions, in question 1, about knowledge of similar work, all responses were negative. In questions 2 and 3, about difficulties in understanding the activities and potential problems in the website, most participants answered "No". As for the videos in the tutorial, the following comment stands out: "The video of Tutorial 2 presents the instructor's voice without quality. Could re-record. Use translation into Brazilian Sign Language, if the institution has a translator it would be interesting." which will be considered in future updates.

In addition, in the last question in which it is asked about possible suggestions for improvement, two answers that stood out, about the use of 'G', referring to Google, on the homepage in the lower background in a repeated manner, mentioned: "(...) for me the less information the better, cause if there is a lot of things calling the attention

I lose the focus, I have ADHD (Attention deficit hyperactivity disorder) (...)", was also updated, according to the suggestions. And the other about the definition of gender stated: "I think it is important to put a definition of gender as a category of social representation. This way we avoid the frequent misunderstanding of confusing gender with biological sex", this suggestion will be considered in the inclusion of work in multidisciplinary groups to broaden the view of the meaning of gender in society.

5.2. Results: Evaluation

The results were based on 3 data sources: responses to the proposed activities, the applicator's observation, and responses to the questionnaires, and for each type of data, two assessments were made: Interaction with the tool and knowledge of the topic.

Interaction with the tool:

To carry out activity 01, Gmail was used and for activity 02, which would be google documents, it was adapted for oral and collective response among the students.

– Activities responses:

Most email activities were as requested with: subject, body text, opening and closing greetings, name, and recipient. There were some occurrences of responses placed in the subject field, placing the subject different from what was requested, forwarding the email again, missing one of the greetings, not skipping lines between initial greeting, text, final greeting, and name, placing all on a single line.

– Applicator's observation:

In the observations, some behaviors such as interactions with tools and students' doubts during the workshop were noted. It was noticed: Students who had difficulty in knowing where (on the browser screen) they should type the link to the survey forms; students who requested help to log into Gmail; others who expressed doubts about the structure of the activity's email, they didn't know about the terms Subject or initial and final greetings and also a student writing all the requested structure of the response in the subject field.

– Answering the questionnaires:

To understand how familiar they were with the tool, 2 questions were asked with 3 possible answers each, 'Correct', 'Wrong' and 'Don't remember'. In this work, only

Gmail was considered, which was the only tool used by the students. The questions were:

1. What fields need to be filled in to send a message? What is mandatory?
2. When you start writing an email but don't send and close the New Message box, what happens?

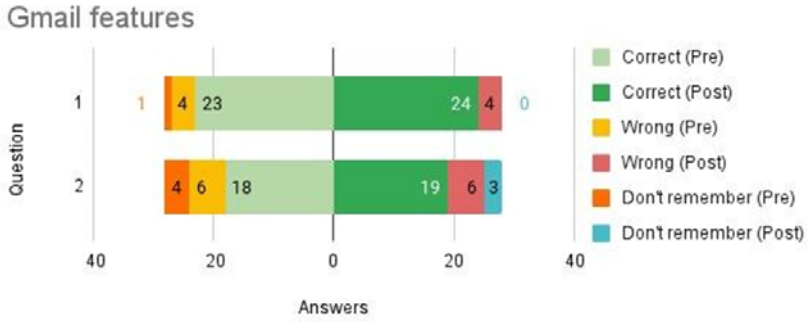

Figure 8. Form responses before the activity - *pretest* (left side) and after the activity *posttest* (right side).

Of the 28 responses obtained, there was no significant change in learning about Gmail functionalities after the workshop. It is possible to note an increase of 1 correct answer from *pretest* and *posttes*t for question 1 and 2.

This form was also asked about the frequency of use of gmail and the answers were: 17.9% every day, 28.6% at least once a week and 53.6% at least once a month.

knowledge of the topic:

– Activities responses:

The first activity on stereotypes is intended to start a discussion about unconscious biases. The students had to answer this question: *Father and son had a terrible car accident. Someone calls the ambulance, but the father doesn't resist and dies on the spot. The son is rescued and rushed to the hospital. Upon arriving at the hospital, the most competent person in the operating room sees the boy and says: 'I can't operate on this boy! He is my son!'. Who is this person?*

The evaluated responses were sent by Gmail and it was observed that most girls (20) responded that the mother is the most competent person in the operating room. In addition, there were occurrences that the most competent person would be: another father of a homo-affective couple, the head without mentioning kinship, speculation that it could be a responsible person or stepfather or biological father and a dubious answer, but no context about parenting. It should be noted that "doctor" in Portuguese has different forms for female and male as "médica" and "médico", respectively.

Due to time, activity 2, which asks them to respond on the table below, was adapted for oral responses collectively.

The answers were given collectively by class, in the 3 classes. In class 01, the students answered "No" to all functions/situations described in the table 1. In class 02, the students collectively answered "No" to 7 of the functions and situations presented and "Yes" to items (5) and (6), which correspond to students of law and medicine. And in class 03, the students answered "No" to all functions/situations

Role/Situation	Is there gender equality? (answer with 'yes' or 'no')	Women
(1) Complete graduate (25 anos +)	Yes	56,2%
(2) Councillor	No	16%
(3) Congressperson	No	14,8%
(4) Computer students	No	13,3%
(5) Law students	Yes	55,2%
(6) Medical students	Yes	59,7%
(7) University professors	Yes	46,8%
(8) Civil police (acting)	No	27,6%
(9) Military police (acting)	No	11%

Table 1. Template from Activity 2 in which the students must answer if there is equality and estimate a percentage of women in this occupation or situation.

that reflect the occupation of women in society. Related to percentage estimates, results were obtained only for classes 02 and 03.

In class 02 for the functions and situations mentioned above, the estimated percentages compared to the actual percentages were, respectively: (1) 11.2% less, (2) 6% less, (3) 8.8% less, (4) 11.7% more, (5) 5.2% less, (6) 5.3% more, (7) 16.8% less, (8) 12.6% less and (9) 6% less. By analyzing these data, we can conclude that, in the view of female students, female law students and female medicine students are occupying this space more in academia than men, and the differences in the estimated percentages are close to what is reflected in society. Still, for them, women with higher education are considerably close to having gender parity, at 45%. The biggest difference in estimates was for university professors (less) and military police (less). Even so, in this class, a perspective close to reality can be seen with regard to the occupation of women in different places in society.

In class 03, for the functions and situations mentioned above, the percentage of errors were, respectively: (1) 11.2% less, (2) 11% less, (3) 12.8% less, (4) 8.3% less, (5) 30.2% less, (6) 14.7% less, (7) 26.8% less, (8) 7.4% more and (9) 31% more. In analyzing these data, we can conclude that in their view, university graduates and medical students are considerably close to having gender parity in these locations, even though there is a difference in percentage. The biggest difference in the estimates was for law students (less) and military police (more). In the first case, it can mean that they notice few women graduated in the environments they coexist, in contrast, in the second, it can mean that they notice more female presence in the military police. Still, most estimates were below what is reflected in society, which may mean that, in their view, there is still little female presence in these spaces.

– Applicator's observation:

From the first reflection activity, there were discussions about who would be the most competent person in the operating room. Girls reported that they felt more comfortable talking without the presence of boys. The students spontaneously reported examples of inequality that took place within their social contexts:

– At home with the mother, giving more freedom to the brother than to the girl;
– About harassment in the street, in which the girl responded to the comment and was followed;
– About pregnancy at school, in which the boy student goes to school on a regular basis and the girl student started not going after the pregnancy;
– On the way in which different sources influence the maintenance of the gender stereotype: school and family;
– About dress rules, where girls and boys are treated differently and feel about that difference.

– Answering the questionnaires:

To understand gender stereotyping aspects, the Gender Stereotype Test (IDR-GST) developed by IDRlabs (Mills et al.) was used. The test asks respondents to analyze the situation: 'In a heterosexual couple, who do you think should be responsible for...' and answer for each responsibility below, 8 for male stereotypes and 8 for female stereotypes, using as possible answer: only the man; mainly the man; man and woman equally; mainly the woman; and only the woman.

From Male Gender Stereotypes:

1. Ask in marriage.
2. Dealing with financial issues, such as determining what to invest in.
3. Earn the money that goes to support the family.
4. Perform basic maintenance of vehicles in the possession of the couple.
5. Wash the sidewalk.
6. Mow the lawn or clean the yard.
7. Drive the car (when both members of the couple are traveling).
8. Protect the couple from physical harm.

From Female Gender Stereotypes:

9. Wash, fold and store clothes.
10. Staying at home with a sick child.
11. Wrapping gifts (eg birthday or holiday gifts).
12. Prepare meals.
13. Encourage the couple to better understand each other's emotions.
14. Groceries purchases.
15. Decorate the house.
16. Domestic cleaning.

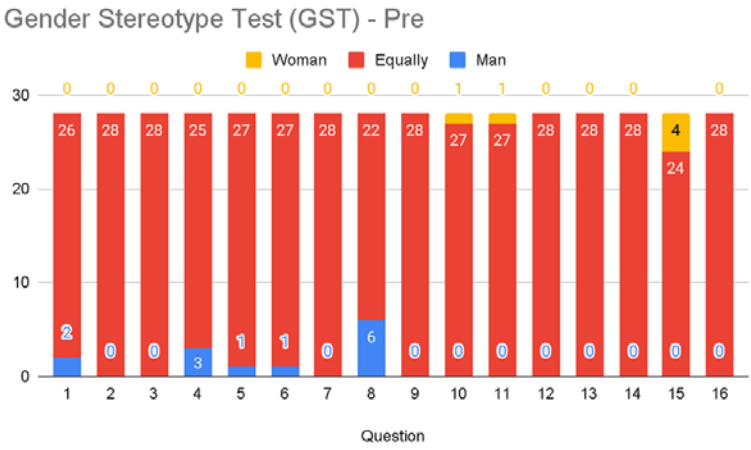

Figure 9. Answers before the workshop.

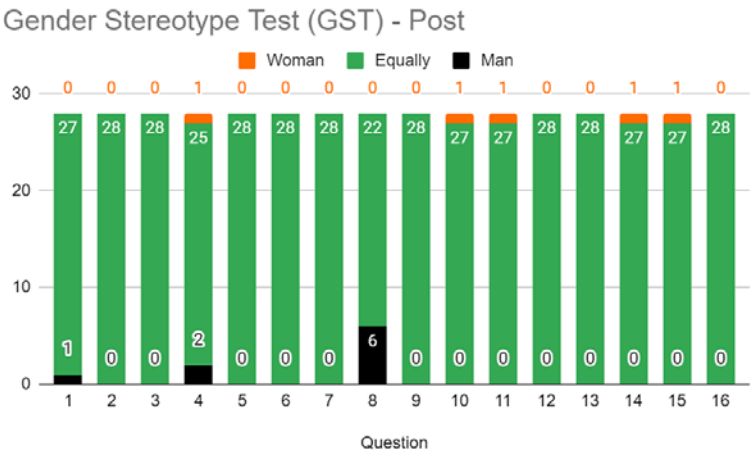

Figure 10. Answers after the workshop.

The questionnaires were applied before and after the activities, as shown in the data obtained in Figure 9 and 10, respectively.

Overall, there were no significant changes in responses after the workshop, with most responses being maintained. Analyzing the pretest and posttest graphs, most girls do not have gender stereotypes. It is also noticed that some of the answers changed after the workshop, in questions 1, 4, 5 and 6 associated with male stereotypes and in 15 associated with the female stereotype. Still, it is observed that 6 answers to question 8, associated with the male stereotype, remained in the answer after the workshop.

6. DISCUSSION

It is important to understand that applicators play a key role in developing an understanding of the subject and the use of the tool. In the workshops, interventions were carried out when there were doubts about the tool or when there was any discrepancy in the requested activity. In addition, adaptations in the workshop or after each workshop were made to improve the experience of the students, for example: writing the links to forms and tutorials on the blackboard to improve visibility and put examples of greetings because the students were unaware.

In the first assessment, about the interaction with the tool, there were students who had more difficulties than others, but all managed to deliver the activity. The workshops have greater learning potential when applied to all activities, as with practice, familiarity with the tools is made possible and, consequently, computer skills improve. Therefore, it is recommended that there be preparation for the application of all modules for the development of computational skills using Google Drive.

In the second evaluation, there was an enriching discussion, from different points of view, within the activities related to the theme stereotypes and women in society included in the module of vocational choices. In the activity using Gmail, it was analyzed that the majority answered the mother as the most competent person in the operating room, but there were points of view that, despite not being limited to the conception of the heterosexual couple, could not see a woman in the position of greater professional competence. In activity 02 with the table, it is important that they do it individually so that the students cannot influence one another. However, it is suggested that an open discussion be taken so that the questions and conclusions can be made together.

Considering that the girls expressed more tranquility to contribute to the discussion without the boys, it is important to emphasize that it is necessary to create safe environments just for girls so that they feel comfortable in this environment. This does not mean that boys cannot participate in the discussion, on the contrary, they must, but at opportune times to do so. Therefore, the presence of a woman in the role of applicator of the workshop is significant, having her representation as a factor that contributes to achieving the objective of discussing gender equity in a structurally patriarchal society.

Assessments must be carried out continuously by the applicator of the workshop, so that strategies are drawn up in the next meetings, seeking to understand the difficulties with the tool and the interpretations of the theme to guide a consistent and critical learning process.

7. CONCLUSIONS

According to the participants of the testing stage, the work can be considered relevant to be applied in an instructional context, as materials that help participants of projects that work with women and computing. It is noteworthy that the GoGirls website aims to contribute socially to gender issues in society.

According to the data from the evaluation, activities responses, applicator's observation and answering the questionnaires, it is possible to conclude that the workshop has a learning potential both in gender equity issues, as it raises discussions that provoke critical thinking, and in the construction of computational skills by proposing activities that use web 2.0 tools. However, it is recommended that the workshops be conducted in a linear way, applying all modules and activities, so that there is an evolution in learning.

As future work, it is intended to evolve the site, placing workshop materials to facilitate application in the instructional context by an applicator and improving some suggestions for the environment. Also, to carry out an assessment of all modules and activities applied in project workshops Heroínas Digitais.

Finally, it is important to realize that the website can and should be constantly updated to meet the objectives for which it was created. The proposal for future work is that the site updates be carried out by a multidisciplinary research group, covering different areas and making relevant provocations for the evolution of the project.

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