

## *UX Evaluation of a School Newspaper Creation Platform*

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### **Abstract**

Media and information literacy is an increasingly important skill, especially for the younger audiences who consume and believe in information that may not be credible. Thus, school journalism can contribute to combat misinformation and develop media literacy in young people. This paper reports on a platform developed to create school newspapers and support news writing in Portuguese. This tool has several features that can help students write news, such as detecting possible spelling errors and suggesting corrections, suggesting synonyms, and searching for related news sorted by credibility level that can be used to add information to the student's text. The goal is to encourage students' critical thinking about the content they access and create. This paper describes the tests carried out with 44 students and teachers from Portuguese schools on the platform to evaluate the quality of the user experience. The tests assessed momentary UX perception, separating participants into two user profiles, authors, and editors. The methodology applied for this evaluation was divided into four moments: (i) contextualisation of the project and scope of the platform; (ii) initial characterisation questionnaire to learn more about their writing and reading habits, participation and experience in newspapers and contact with news and familiarity with the concept of fake news; (iii) usage scenario, in which participants were able to try the platforms' functionalities; and (iv) final questionnaire, assessing usability, use of the platform and understanding the fundamental aspects of the solution, utilising the SAM and SUS scales.

Keywords: School Newspaper, Digital Platform UX Evaluation, User Experience, Media and Information Literacy

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## Introduction

School journalism is a powerful pedagogical tool for improving crucial skills in students, such as collaboration, critical thinking, and writing. The shift to the digital age may increase the importance of such a tool beyond school grounds. The advance in technology and connectedness is part of the present society and acts as a social necessity for communication and information by using social media, digital platforms or apps, or news sites. Therefore, having the right tools to navigate this complex digital information ecosystem is crucial. For this, Media and Information Literacy (MIL) is a set of skills that enable users to understand, objectively assess, and respond wisely to media content (Al Zou'Bi, 2022).

It is in this context that the TRUE (Trustworthy news and Related content for a Unified writing Environment) project emerges – promoted by the Portuguese newspaper “Jornal Público,” by the company MOG Technologies and by the University of Aveiro. Its main objective is to create a technological ecosystem that allows the younger generations to write news based on a credibility analysis of information sources, as well as the identification and contextualisation of central themes, resorting to the revitalisation of school newspapers (Carvalho et al., 2023). At the centre of this platform stands the importance of enhancing MIL in the students, helping them evaluate the veracity of the news published and contextualising new content. This also helps combat misinformation and the spread of fake news, which is a malady of today’s society.

A tool such as the TRUE platform can be helpful for the younger generations. Given the easy access to mobile technology and the ease with which information spreads, several forms of misleading information, such as rumours and fake news (Molina et al., 2021). This particularly affects younger audiences, which are further influenced by the spread of misinformation. According to Linden (2023), misinformation can infect human minds, and with the usage of the internet, especially social media, it can spread like a virus in a matter of minutes. Therefore, the promotion of MIL can support the awareness of students on the internet to fight hate speech, false news, and online bullying, for instance, but also to utilise media technology to promote the personal well-being of users, being a tool for self-expression and empowerment using critical thinking (Pérez-Escoda et al., 2021). In this context, creating and supporting a pedagogical approach for schools to foster MIL among the students is necessary.

According to Adjin-Tettey (2022), school journalism plays a significant role in addressing misinformation and fostering media literacy among young individuals. Building upon this premise, the TRUE project was initiated to establish school newspapers and support news writing in Portuguese. By engaging students in creating and disseminating news, the project aims to empower them with the necessary skills to navigate the media landscape critically and effectively.

Throughout the platform’s development, the TRUE project was grounded on a set of guiding principles, which shaped its design and functionality. These principles included:

- **Fostering Originality:** Students were encouraged to produce original texts. To facilitate this, a plagiarism check feature was implemented to highlight and promote more authorial and creative final products.

- **Supporting Efficient News Writing:** The platform aimed to assist students in improving their news writing skills by providing tools such as spelling checks and synonyms substitution, thereby enabling better and quicker content creation.
- **Newspaper-inspired Layout:** The platform's layout was designed to resemble traditional newspapers and news articles, creating an engaging and familiar interface. Additionally, the platform offered support for including images to enhance the communicative value of the stories.
- **Customizable and Personalized Environment:** Editors were provided with a user-friendly interface to customise their newspaper's homepage, allowing them to create a unique and personalised environment. Features such as the ability to change the colours and sections of the newspaper were implemented to facilitate this customisation process.
- **Additional Supporting Features:** Numerous other features were incorporated to support online school newspapers, ensuring a comprehensive and robust news creation and publication platform.

By adhering to these principles, the TRUE project aimed to create a platform that not only empowered students to produce high-quality content but also fostered a sense of ownership, creativity, and engagement within school journalism.

The evaluation of the platform's User eXperience (UX) involved participants who were categorised into two different roles, namely editors and authors. The evaluation methodology comprised four distinct steps, which will be elaborated upon. The primary objective of this evaluation was to gather valuable information and insights that would initiate the iterative Design-Based Research (DBR) process. The platform could be improved by analysing the gathered data alongside the process, and further testing could be conducted with the refined features. This iterative approach not only allowed for continuous enhancement of the platform but also facilitated ongoing testing as new features were introduced and consolidated.

This paper focuses on assessing the UX, mainly in relation to the usability and effectiveness of the TRUE platform, through momentary tests conducted with 44 students and teachers from Portugal. The paper is divided into four chapters. The first chapter provides a detailed description of the TRUE platform. It outlines the platform's key features, functionalities, and objectives, emphasising its role in facilitating the creation of school newspapers. The second chapter focuses on reviewing and exploring existing conceptualisations of Design-Based Research (DBR) and the utilisation of usability tests and assessments. This chapter sets the methodological framework for evaluating the TRUE platform and emphasises the importance of incorporating user feedback in the iterative development process. The third chapter presents and analyses the results obtained from the UX tests. It discusses the findings and contributions of these tests towards further developing and refining the TRUE platform. Finally, the paper ends with some conclusions and final remarks on the project.

Overall, the paper aims to provide a comprehensive understanding of the TRUE platform, its usability, and its potential impact on creating school newspapers. It highlights the significance of user feedback and iterative development in improving the platform's functionality and user experience.

## **1. TRUE Platform**

The project TRUE was developed in Portugal with the goal of reducing the consumption and spread of fake news among younger audiences. It aims to accomplish this through an innovative and intuitive platform that supports and provides unique tools for creating and supporting digital school newspapers (Carvalho et al., 2023).

The production of journalistic content can play a vital role in enhancing the critical thinking skills of young individuals, as it necessitates thorough research from reliable sources to gather information about the subject being explored. In Portugal, school newspapers are recognised as strategic and pedagogical tools that can contribute to several aspects of students' development, including fostering collaboration, responsibility, and resilience. By strengthening their capacity to seek and make informed assessments of news, such initiatives empower students to take charge of their engagement with media and effectively manage information, particularly online.

The primary goal of the evaluation process was to gain insights into the technological ecosystem utilised by students and their reading habits, both concerning news and general reading. Additionally, the project aimed to assess their proficiency in analysing the credibility of information sources and news articles while equipping them with tools to enhance their critical thinking abilities.

To achieve these objectives, dedicated environments were established for two distinct groups: student authors responsible for writing the news and student or teacher editors tasked with article editing, evaluating, and publishing. In the empirical phase of the project, the news articles were exclusively written by teachers. However, the selection of editors followed the editorial guidelines typically employed by school newspapers, comprising a mix of students and teachers. It is worth noting that throughout this research, all schools adopted an approach in which student authors and editors hailed from diverse backgrounds, thereby fostering a diverse and inclusive journalistic environment.

To ensure the robustness of the solution, the entire development process was centred around a series of iterative stages, employing the Design-Based Research (DBR) approach for technology development. DBR is a methodological approach that enables the refinement of real-world interventions through iterative design, implementation, and evaluation (McKenney & Reeves, 2014). This approach allows for continuous improvement and adaptation of the solution by incorporating feedback and insights gained from each iteration. By following the DBR framework, the project maximises its potential to create an effective and high-quality outcome.

## **2. Development Process**

As stated previously, the development of the TRUE platform followed an iterative DBR process and thus considered the importance of conducting qualified evaluations with participants. The research encompassed all the steps considered essential to align the specific needs of schools and their newspapers, enhance publishing capabilities and promote public participation and support for the platform. The iterative DBR process employed in developing the TRUE platform is comprised of three fundamental steps, which are as follows:

- **Gathering Requirements:** The first step involved collecting and analysing requirements for the platform. These requirements informed the selection and development of the platform's features.
- **Platform Development:** The second step focused on developing the TRUE platform. The platform was designed, implemented, and refined based on the gathered requirements to align with the intended objectives and functionalities.
- **Evaluation Rounds:** The third step encompassed iterative evaluation rounds, which played a crucial role in the DBR process. During these rounds, feedback and insights from participants were collected and analysed. This feedback was then used to inform the iteration process, involving reviewing, debugging, and further evaluation phases. The iterative nature of this step ensured continuous improvement and refinement of the platform based on the insights gained from the evaluations.

By following this iterative DBR process, the TRUE platform aimed to create a solution that effectively addressed the needs of schools to create their newspapers. Feedback from evaluations played a vital role in enhancing the platform's functionality, usability, and overall support for publishing, public participation, and platform acceptance.

## 2.1 Platform Features

The TRUE platform comprises two primary components: a front office and a back office. The front office component, depicted in Figure 1, is responsible for displaying the newspaper to the public, with all the published news organised into different sections. It provides accessibility to readers, allowing them to access, read, and share the school news conveniently. The front-office interface was designed to facilitate a user-friendly and engaging experience for the audience.



Figure 1 – TRUE Platform front-office

On the other hand, the back-office component is where authors and editors can manage the newspaper. Authors and editors can create and publish news articles within the back office. Additionally, they can personalise the newspaper according to their preferences. This

includes customising news sections, choosing a colour palette, and configuring the layout of the front-office interface. This flexibility allows for a more customised and engaging user experience for those accessing the newspaper and those managing its content.

Moreover, the TRUE platform provides a comprehensive set of tools to support students in their news writing process. The news creation interface, as depicted in Figure 2, offers several functionalities to enhance the writing experience.

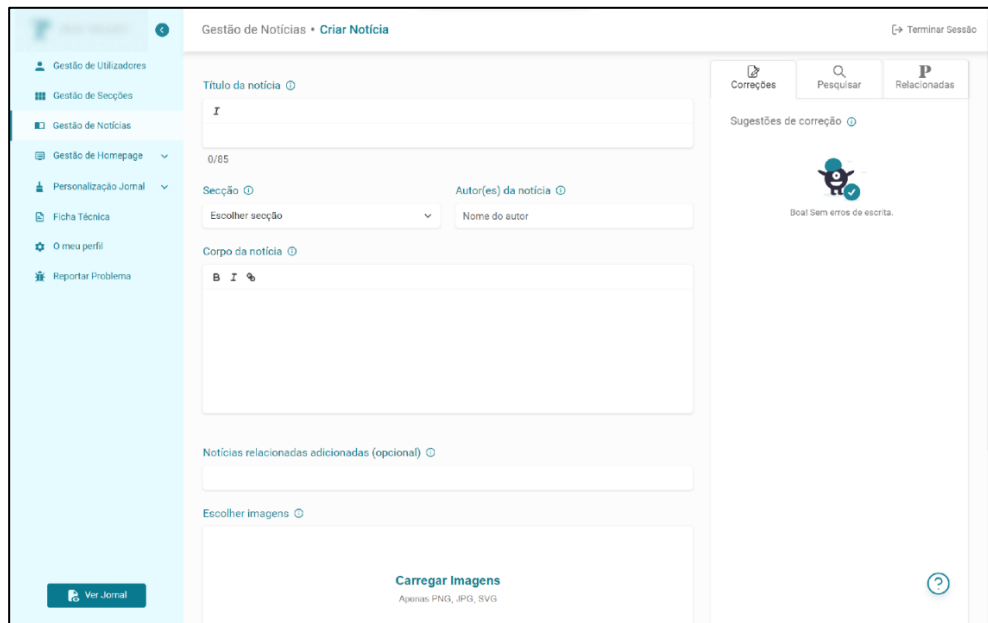


Figure 2 – TRUE Platform back-office

One of the key tools available is the spellchecker, which actively checks the text as users write and suggests corrections for any misspelt words. This feature assists students in maintaining accurate and error-free content throughout the writing process.

To further enrich their texts, users have access to a synonyms tool. This tool allows students to explore alternative word choices and expand their vocabulary, enabling them to enhance the quality and expressiveness of their writing.

To facilitate the research phase, the platform incorporates a search function that enables users to explore news from reputable Portuguese news outlets. By utilising this feature, students can gather information from reliable sources and include them as references or citations within their articles, ensuring credibility and supporting the integrity of their work.

Furthermore, the platform reinforces the significance of producing original news content. An automatic plagiarism check feature is integrated into the platform to address this. This functionality assesses whether the content has been copied or replicated from other sources on the internet, promoting the importance of creating original content.

By offering these features, the TRUE platform aims to provide comprehensive support to students throughout the news writing process, fostering their critical thinking, writing skills, and information literacy development.

### 3. UX Evaluation

The research methodology for assessing the UX of the TRUE platform was built upon the principles of the DBR process. The initial approach for data gathering focused on conducting a momentary UX evaluation, which aimed to capture the users' experience during platform usage and observe any perceived changes and interactions (Koonsanit & Nishiuchi, 2021).

The momentary UX evaluation method differs in terms of duration compared to other types of evaluations, such as anticipated, episodic, or cumulative UX evaluations. It explicitly emphasises the experiential aspects and the human-computer interaction, aiming to understand users' perceptions of practical aspects such as utility, ease of use, and efficiency of the product or service. This evaluation approach is particularly useful for collecting feedback from users during the early prototyping phases of the development process, as it enables the identification of user experience aspects that may evolve or change over time (Marti & Iacono, 2016).

The momentary UX evaluation for the TRUE platform comprised four distinct steps. Firstly, the project was explained, providing an understanding of the background and objectives of the research. Secondly, initial data collection was performed, which involved capturing previous user experiences and perceptions. Subsequently, the participants were invited to explore the platform in multiple scenarios, enabling users to engage with it in different contexts and settings. Finally, a final round of data collection was conducted to gather additional feedback and insights from the users' experiences with the platform.

By adopting this momentary UX evaluation methodology, the research team aimed to obtain valuable data and insights regarding the users' experience with the TRUE platform. This iterative approach allowed for identifying strengths, weaknesses, and areas of improvement, contributing to the continuous development and refinement of the platform.

#### 3.1 Structure of the Momentary UX Evaluation

The initial data collection process for the momentary UX evaluation consisted of four distinct moments, each with its specific approach. These moments were designed to gather valuable insights into users' experiences with the TRUE platform. The following is a breakdown of each moment:

**First Moment:** Participants were shown a brief two-minute video<sup>1</sup> that provided an overview of the platform, including its aim and main features. Additionally, a step-by-step tutorial was provided to the participants that will assume the authors' profile, specifically targeting children and teenagers, to demonstrate the ease and speed of creating and publishing news on the digital platform.

**Second Moment:** Participants were asked to complete a questionnaire to understand their background and previous experiences with school newspapers. For authors, the questionnaire also inquired about their reading and writing habits.

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<sup>1</sup> Available at: <https://youtu.be/8vxFWaXENkA>

**Third Moment:** Participants were given two minutes to freely explore the platform, allowing them to familiarise with its interface and functionalities without following a specific usage flow. The purpose of this phase was to help participants feel comfortable before proceeding to the next phase, which involved specific usage scenarios. Next, authors were given a particular scenario where they were encouraged to write a news article, while editors had two tasks: approving pending news articles and updating the homepage. During this phase, participants were also encouraged to use the think-aloud protocol, whereby they voiced their thoughts and observations while interacting with the platform (Byrd et al., 2023).

**Fourth Moment:** The final questionnaire focused on participants' overall user experience with the platform. It incorporated two scales, the System Usability Scale (SUS) and the Self-Assessment Manikin (SAM), to assess usability and emotional responses, respectively. Additionally, a set of open-ended questions allowed participants to provide detailed feedback and insights about their experience using the TRUE platform.

By following this multi-faceted approach, the research aimed to gather comprehensive data and feedback regarding users' experiences with the TRUE platform. The combination of tutorial videos, questionnaires, free exploration, scenario-based tasks, and post-interaction assessments provided a well-rounded understanding of usability, user satisfaction, and overall platform perceptions.

### 3.2 Data Collection Methods

For this study, two evaluation scales were chosen to assess the momentary UX of the TRUE platform, the System Usability Scale (SUS) and the Self-Assessment Manikin (SAM) questionnaire.

The SUS was selected for its simplicity, ability to express the platform's utility and the availability of an approved Portuguese translation. It consists of a set of 10 questions that participants rate on a five-point Likert scale and yields a usability score ranging from 0 to 100 (Brooke, 2013).

The results of the SUS evaluation, as shown in Figure 3, provide an overview of the participants' ratings and perceptions of the platform's usability. The scores obtained reflect the participants' collective judgments regarding the ease of use, learnability, efficiency, and overall user experience of the TRUE platform.

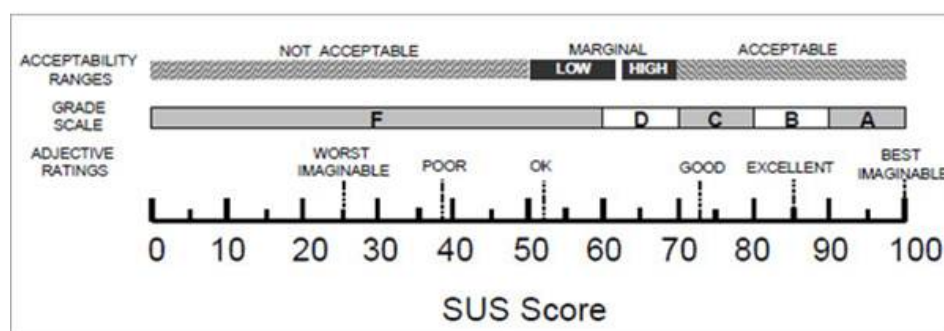


Figure 3 - SUS Score Rating (Brooke, 2013)



The SAM was utilised as an emotion assessment tool in this study. SAM employs graphical representations to capture three emotional dimensions of using the TRUE platform: satisfaction, motivation, and control. This tool was chosen for its ease of use and ability to allow students and teachers to express their emotions during their usage of the platform (Bradley & Lang, 1994).

The SAM evaluation involves participants rating each dimension using a scale of 1 to 5, representing each value by a corresponding figure. The analysis focuses on associating values with each set of figures, where higher values indicate a stronger expression of the intended emotion (Bradley & Lang, 1994).

It is important to note that there is a slight variation in the scale for the dimension of control. Unlike satisfaction and motivation, the scale for control is reversed, ranging from 5 to 1. This detail creates the need for normalising the values to align them with the data collected for the previous dimensions, ensuring consistency in the analysis and interpretation of the results.

Finally, after these scales were applied, the participants were asked a set of open-ended questions, which was crucial in gathering understanding of the participants' overall experience with the platform: what they would like to change on the platform; ii) if they found it useful and iii) if they had any additional insights that could further improve the user experience.

While closed-ended questions provide valuable quantitative data, open-ended questions allow participants to provide detailed and qualitative insights that a standardised set of multiple-choice questions cannot capture. Participants were encouraged to provide specific examples, elaborate on their responses, and share additional thoughts or feedback regarding their interaction with the platform.

The insights gained from the open-ended questions provided valuable qualitative data that complemented the quantitative data obtained from the closed-ended questions. These questions allowed for a more in-depth exploration of participants' perspectives and provided valuable input for further refining and enhancing the TRUE platform.

#### **4. Results and Discussions**

The evaluation took place at the University of Aveiro as part of the "Cientificamente Provável" event, held between February 7th and 9th, 2023. Three schools from the Aveiro district participated in the event and thus in the momentary UX evaluation.

Over the course of the three days, a total of nine test rounds were conducted, accommodating approximately five participants per session. Each evaluation lasted 50 minutes on average and was conducted individually with a researcher per participant. In total, 44 user tests were carried out, with two participants taking the user role of editors, while the remaining 42 tested with the role of author.

The evaluation results will be presented separately for the author and editor profiles to ensure a comprehensive analysis. This division is necessary as authors and editors had distinct roles and tested different features of the TRUE platform.

#### **4.1 Author Profile Result**

During the testing of the TRUE platform, 42 authors participated, representing a diverse range of grade levels. Despite the varying grade levels, there was a high level of engagement and coherent participation during the momentary UX testing. Overall, the students expressed an "excellent" opinion of the platform's usage and usability, indicating a satisfactory experience, high motivation, and a sense of control while using the platform.

Most of the authors (33 students) were in the 12th grade, five were in the 6th grade, and the remaining four were in the 5th grade, as indicated in the graph. Notably, 74% of the participants had never been involved in creating a school newspaper, making their experience with the TRUE platform wholly new and unfamiliar.

The evaluation of the platform using the System Usability Scale (SUS) yielded a score of 86.4, corresponding to an "excellent" user experience (Figure 4). This score indicates that the platform is highly intuitive, presenting an efficient flow of use that adapts to the users' needs. However, it is important worth noting that a usability assessment cannot be solely based on quantitative measures and should be complemented with qualitative analysis.

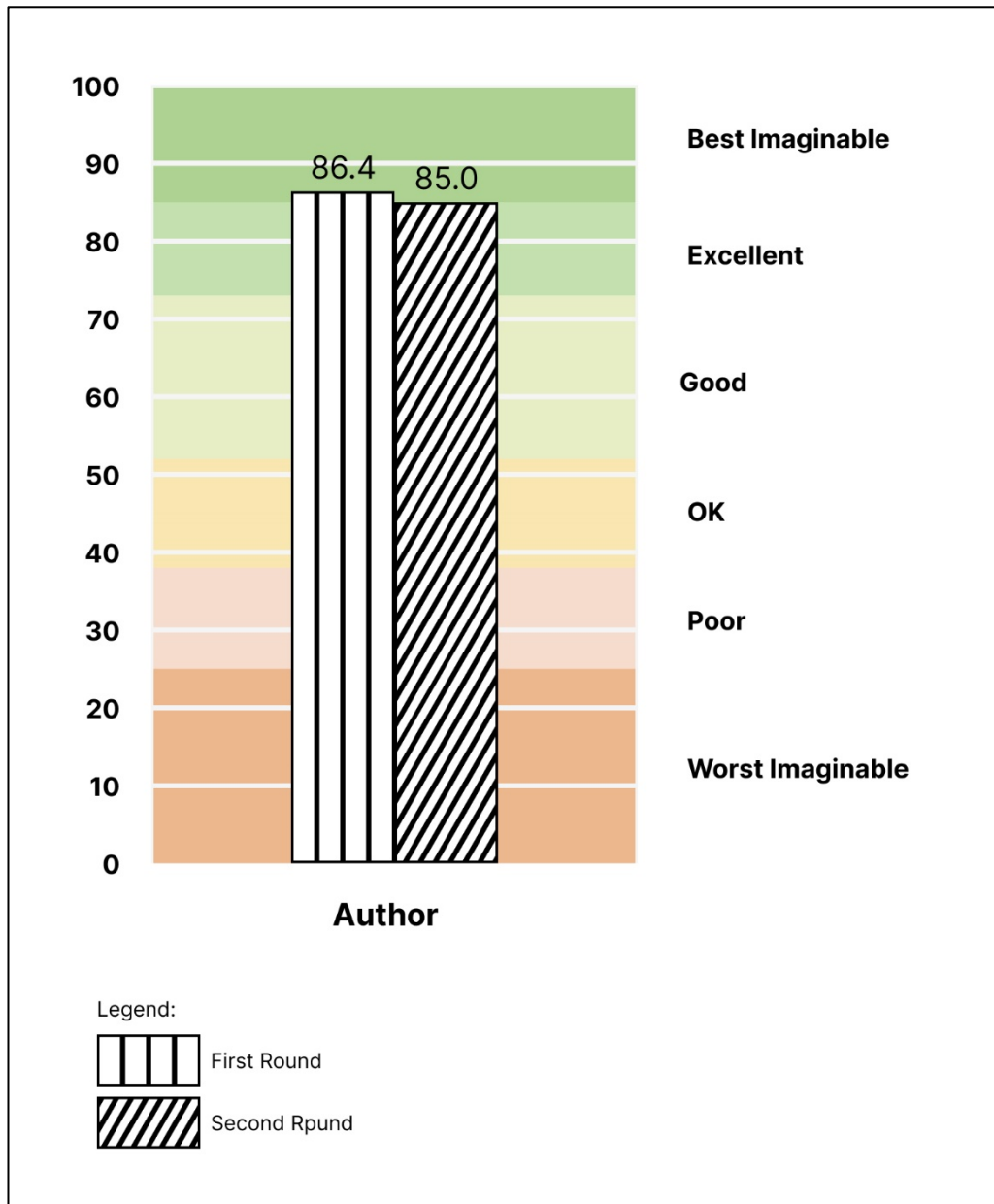


Figure 4 - SUS results of the evaluation - Authors

Regarding the SAM questionnaire, the results were also very positive (Figure 5). In terms of satisfaction, the participants reported a score of 4.6, indicating high satisfaction with the platform. This result suggests that most users reacted positively while using the platform, leading to a pleasant and satisfactory experience. The level of motivation was also high, with a score of 4.1, indicating that users felt motivated to explore the platform and carry out the usage scenarios presented to them. Additionally, the level of control recorded a score of 4.4, indicating that users felt the platform behaved as expected and gave them a sense of control.

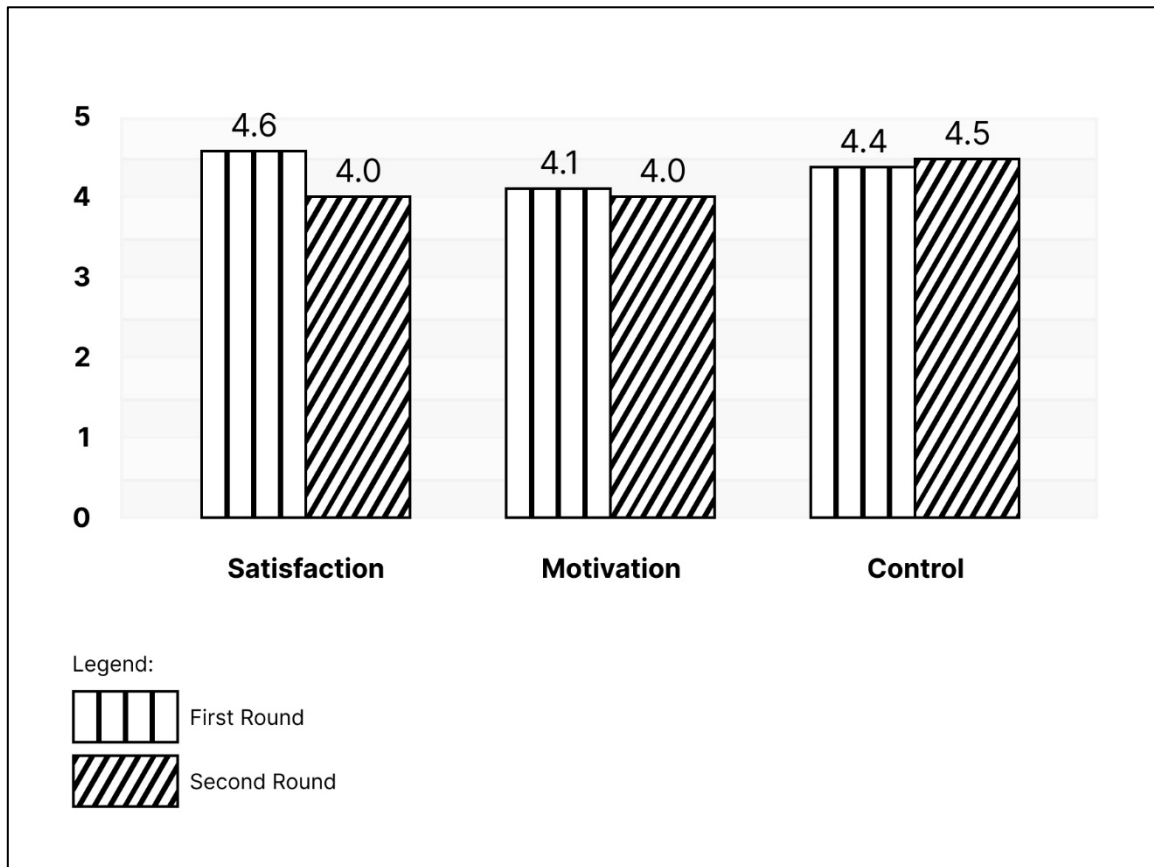


Figure 5 - SAM results of the evaluation - Authors

As stated previously, open-response questions were included after the questionnaires of SAM and SUS. The most frequently mentioned aspect requiring improvement was the inclusion of help elements in the news creation tool. Users suggested the addition of small tutorials and tooltips that would accompany each element of the news creation process, aiding in the understanding and utilisation of the platform. Another concern users raised was content management, particularly in adding images, videos, and other relevant news elements to complement their writing.

These insights and suggestions provided valuable feedback for further refining and enhancing the TRUE platform, addressing specific areas of improvement, and meeting the needs of the authors.

#### 4.2 Editor Profile Results

In evaluating the editor profile, it is essential to note that only two participants were teachers without previous experience in school newspapers and platforms for writing news articles. Despite the small sample size, valuable feedback was obtained by applying the SUS questionnaire, indicating an "Excellent" level of usability with an average score of 87.5 (Figure 6). This result suggests the platform is user-friendly and well-organized, enabling easy interaction and navigation.

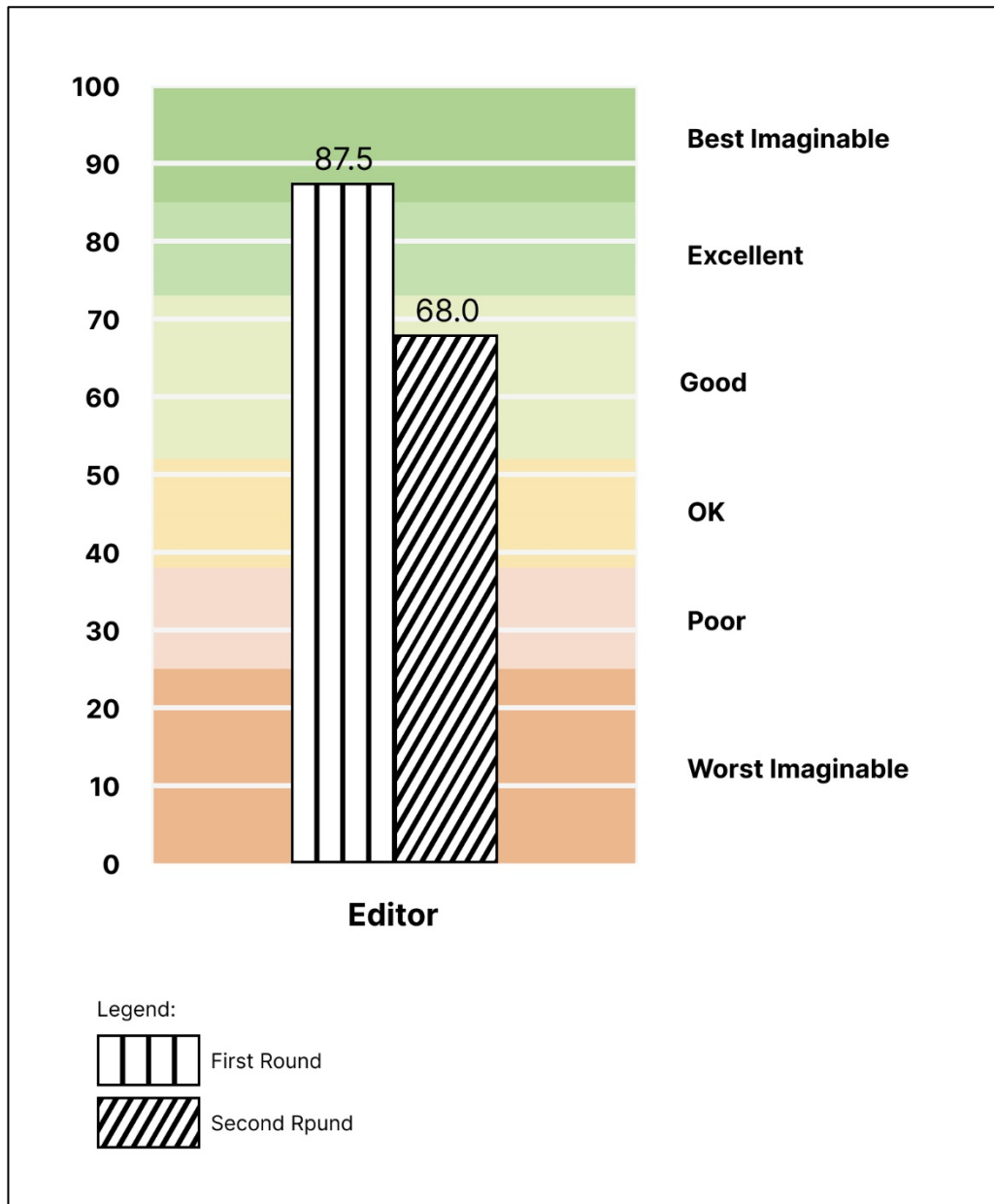


Figure 6 - SUS results of the evaluation - Editors

The analysis of the SAM questionnaire, although based on only two responses, revealed a positive experience for the participants (Figure 7). A maximum score of 5 was obtained in satisfaction, indicating a highly positive experience using the platform. The participants also expressed a high level of motivation, with a score of 4.5, thus reflecting enthusiasm for exploring the platform and engaging with the proposed scenarios. The evaluation of perceived control yielded a score of 4.5, suggesting that the platform met the participants' expectations regarding behaviour and functionality. These results indicate that the participants did not encounter significant difficulties while using the platform.

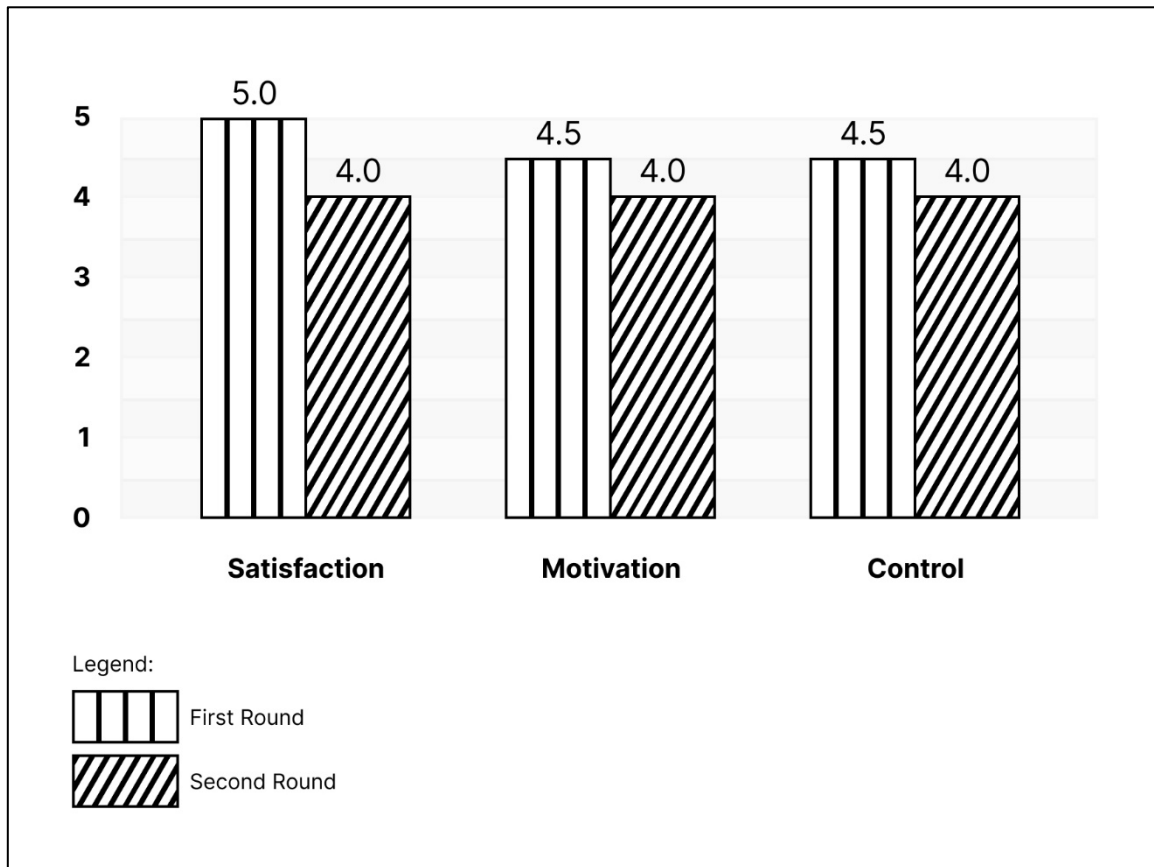


Figure 7 - SAM results of the evaluation - Editors

Through the open-ended questions at the end of each test, participants expressed that they found the tool suitable within its operational context. They highlighted the importance of functionalities such as including related news and the ability to verify credibility. Additionally, participants expressed a desire for some personalisation options, particularly in colour customisation, to enhance the user experience.

Although the sample size was limited, the feedback from the editor's profile contributed to the overall evaluation. It provides valuable insights for further refinement and enhancement of the TRUE platform, ensuring its suitability for editors and addressing their needs and preferences.

## 5. Conclusions

The findings from the momentary UX assessment of the TRUE platform indicate a positive impact on the users (both authors and editors) and highlight its excellence in usability and user experience. The SUS score of 86.4 for authors and 87.5 for editors reflects a high level of usability, indicating that the platform is intuitive, user-friendly, and efficiently meets the needs of its users. The SAM assessment results further demonstrate high satisfaction, motivation, and control levels among the users, reinforcing their positive experience with the platform.

The most valued points were: i) the search news functionality; ii) the incorporation of synonyms and text correction tools, and iii) the overall assistance provided in news writing.

These features were seen as valuable additions to the platform, enhancing the users' ability to create engaging and accurate content.

Regarding areas for improvement, the feedback highlighted the need for small tutorials or tooltips to guide users in using the platform effectively, refinement in content management features such as adding images, videos, and related news, and the inclusion of more personalisation options for the homepage, particularly in terms of colour customisation.

These improvement points were addressed in the subsequent phases of the DBR process, following an iterative approach to development and assessment. The feedback and suggestions gathered from the momentary UX assessment informed the refinement and enhancement of the platform, ensuring that the identified areas for improvement were addressed to enhance usability and user experience.

Overall, the momentary UX assessment goals were successfully achieved, providing valuable insights and constructive feedback to support the ongoing development of the TRUE platform. The iterative nature of the DBR process allows for continuous improvement based on user feedback, ensuring that the platform evolves to meet the needs and preferences of its users.

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