Young people participation in the Digital Society: a case study in Brazil

Everton Knihs[1][0000-1111-2222-3333] and Alicia García-Holgado[2][0000-0001-9663-1103]

[1] Universidade Presbiteriana Mackenzie, São Paulo, Brazil
[2] GRIAL Research Group, Computer Sciences Department, Research Institute for Educational Sciences, University of Salamanca, Salamanca, Spain
`tomspsp@gmail.com, aliciagh@usal.es`

Abstract. Young people are key drivers of new behaviors and understandings. Their participation in the society allows the integration of their ideas and constructive analysis to foster policies and innovative solutions in which technology are an intrinsic element. Citizen science can be used to give voice to children and young people through the development of citizenship and approach to scientific debate. In the European context, the WYRED project has developed a methodological framework to support the participation of young people in the Digital Society through social dialogues and the support of a technological ecosystem to allow internationalization. This work aims to lay the groundwork to transfer the WYRED framework to the Brazilian context through a case study conducted in the Universidade Presbiteriana Mackenzie. The study has allowed to identify the key topics that concern Brazilian young people in relation to desired social change: tolerance to different cultures/opinions; mental wellbeing; necessary changes in education (e.g. future-oriented education); self-image, self-confidence; and Internet safety & privacy.

Keywords: Digital Society, Young People, Digital Participation, Citizenship, Citizen Science.

1 Introduction

The participation of young people in society through digital resources is increasingly based on the intense interaction and discussion of knowledge about the future, a reflection and interests that young people define as priorities for life in society. The need to give young people a voice at a time when communication focuses on the constructive debate enhanced by the concern with cultural and scientific development and changes, listening to these young people becomes an important dimension for citizen science and a critical analysis of the present, with current human actions influencing everyone's future life.

Communication can be considered one of the central factors in the construction of citizenship [1]. Nowadays, in a contemporary moment, communication by digital networks redesigns a new form of sociability between individuals, with interaction and continuous reinvention of the established mode of organization in society [2]. The participation of young people in the society in order to integrate their ideas and

constructive analysis can be an innovative way of thinking together about a future, placing these young people as protagonists in the construction of the collective future.

Citizenship can be exercised in many ways in modern society, reconfigured by values indicated for the construction of social behavior, having as an excellent reference self-reflection [3].

Social transformation, through youth movements, can lead to significant changes that alter the activities and the way of viewing what is structured, the important social issues, especially because society is increasingly technological and connected.

Social projects and debates emerge as a way of realizing ideas and help in the growing process of reflection on the important actions of young people who care about society. The development of citizenship and approach to scientific debate are strong characteristics of citizen science, which contributes to knowledge, environmental concern, from the involvement of citizens [4].

It is important to encourage science and open innovation in young people to create cycles of transfer [5-7] and co-creation of knowledge [8, 9] between research-oriented institutions and the productive fabric [10].

In the European context, the WYRED project has developed a methodological framework to support the participation of young people in the Digital Society through the social dialogues focused on the development of research projects based on the concept of citizen science [11-13]. The project was coordinated by the GRIAL Research Group of the University of Salamanca [14, 15] and had the participation of partners from Austria, Belgium, Israel, Italy, Turkey, and the United Kingdom. Although the project finished in October 2019, the team continues applying and improving the framework through the WYRED Association (https://association.wyredproject.eu).

Table 1. WYRED Project details

Title	netWorked Youth Research for Empowerment in the Digital society
Acronym	WYRED
Funding entity	European Union
Call	Horizon 2020. Europe in a changing world – inclusive, innovative and reflective Societies (HORIZON 2020: REV-INEQUAL-10-2016: Multi-stakeholder platform for enhancing youth digital opportunities)
Reference	727066
Project leader	Francisco José García-Peñalvo
Coordinator	University of Salamanca (Spain)
Partners	Oxfam Italia (Italy)
	PYE Global (United Kingdom)
	Asist Ogretim Kurumlari A.S. - Doga Schools (Turkey)
	Early Years (United Kingdom)
	Youth for exchange and understanding international (Belgium)
	MOVES - Zentrum für Gender und Diversität (Austria)
	Boundaries Observatory CIC (United Kingdom)
	Tel Aviv University (Israel)

Budget	993.662,50€
Start date	01/11/2016
End date	31/10/2019
Web	https://wyredproject.eu

The nine partners have guided over 1500 children and young people between 7 and 30 years old over three years to ask questions and carry out researches about themes and ideas that affect and shape their interactive, performative and communicative worlds. The framework is composed by the methodology and the WYRED Ecosystem [16-18], a technological ecosystem to facilitate the interaction not only between young people from the participant countries but also the interaction of children and young people with stakeholders and decision-makers. The ecosystem works as a catalyst to give voice to children and young people, so their ideas and projects can have an impact on the decision-making processes related to the Digital Society.

The WYRED Project was applied only in the participant countries, although it is possible to apply the framework in other countries due to the methodology and the main software components of the WYRED Ecosystem are available in several languages (English, Spanish, Hebrew, Italian, and Turkish).

In this context, this work aims to lay the groundwork to transfer the WYRED framework to the Brazilian context. The first phase of the WYRED methodology is a set of social dialogues among children and young people. It is necessary to identify the key themes that concern children and young people in relation to the desired social change in order to initiate the dialogue process. For this reason, the case study described in this work is focused on identifying the key themes for Brazilian youth and conduct a set of dialogues, both face-to-face and through the WYRED Ecosystem.

The case study was conducted in the Universidade Presbiteriana Mackenzie (Sao Paulo, Brazil) in the bachelor's degree in Information Systems and Computer Science courses as an activity inside the discipline of Science, Technology, and Society in Mathematics and Computing. Four different groups were involved, with a total of 95 students between 18 and 33 years old.

The rest of the paper is organized as follows. Section 2 describes the methodology used to conduct the study. Section 3 presents the case study. Section 4 describe the main results of the survey. Finally, section 5 discusses the results and summarizes the main conclusions of this work.

2   Methodology

Regarding the methodology used in this work, the beginning occurred through a process of reflection and importance that young people may have on certain subjects; about what they are concerned about some important themes in the Digital Society. The reading, analysis, and discussion among the authors on the subject led to the research of the theoretical foundation, literature review, together to seek a database of information and data that made it possible to contextualize the study.

The WYRED methodology is composed of four phases: preparation, dialogue, research, and evaluation. The case study is focused on the first two phases. First, in the preparation phase, stakeholders, children, and young people express their views on the most important issues that concern young people in the Digital Society. On the other hand, in the second phase, children and young people engage with each other in dialogues to define the exact questions that they would like to focus on [19]. The dialogues can be conducted face-to-face (local dialogues), fully online (international dialogues), or a blended version in which the dialogue starts in person and after online to interact with people from other places.

Both phases were adapted to be applied in a Brazilian higher education institution as a participatory activity in order to obtain the necessary data to form the sample set to establish a clear picture of the current situation regarding the importance of youth participation and their opinion.

First, some key topics from a survey previously applied in Spain, Italy, Belgium, Austria, United Kingdom, Israel, and Turkey were sought to draw. Then, it was proposed to reflect on the main opinions and themes chosen by the young, consolidating the importance of each theme. Thus, the steps developed in this study were:

- Application of a survey based on the instrument applied in the WYRED project to identify the key topics for young people in the Digital Society. The WYRED project carried out a Delphi study to identify and prioritize key areas of interest for young persons. According to the Delphi technique, the survey involves two rounds to achieve a greater consensus on a topic. In this case study, the survey was used as an exploratory instrument to get an overview of the key topics in the Brazilian context.
- Each class was divided into groups according to the selected key topics.
- Identification of the main topics chosen by young people.
- Preparation of the WYRED Platform, one of the software components of the WYRED Ecosystem, to support the dialogues among the students' groups focused on the same topic and in different classes. The WYRED Platform is based on communities, so one community was created for each selected topic.
- Study on the chosen topic and participation in the community previously indicated for integration, exposition of opinion and interaction among young people who share the same thematic concern, through the forums provided in the communities inside the WYRED Platform.

3   Case study

The case study was based on young people's perception of the main topics of interest in the Digital Society. The goal is to give young people a voice so that their opinions are taken into account when making technology-related decisions.

3.1 Approach to the Digital Society in the discipline of science, technology, and society in mathematics and computing

The subject Science, Technology, and Society in Mathematics and Computing is offered in the first semester of the undergraduate course, is a compulsory part of the pedagogical project of the Information Systems and Computer Science courses of a private university located in the city of São Paulo, Brazil. This activity was carried out in four classes, two Information Systems and two Computer Science classes, which were integrated into the discussions of the topics chosen for this case study using the WYRED Platform.

This course consists of theoretical classes with two face-to-face hours per week in total. Theoretical classes provide the basis for group discussions or presentations of individual assignments. The subject of this course covers the following topics: science, history and philosophical conception, science and the modern world, history of technological development, contemporary aspects in technology, the concept of society, culture and social aspects, society and technological development, the social dimension and human and technological aspects, technology and work.

The discipline of Science, Technology, and Society in Mathematics and Computing is focused on the study of the development of science and technology, their interfaces with society, and their reciprocal influences on mathematics and computing. In particular, the study on the epistemological foundations of science and technology; the reflection on non-neutrality in science; the analysis of scientific facts conditioned to their social context of origin and development; and the study of how science's discoveries and their technological applications interrelate with the human social dimension and in the context of the man-machine relationship.

The student must be able to present the fundamental structures and concepts of science, technology, and society. Understand the discoveries related aspects of science and technological development. Know the history of science and the cultural, technological, and social aspects related to information technology professionals, together with the technological development aspects.

The evaluation criterion of this discipline is composed of individual and group writing work, with a formal presentation.

3.2 Key topics for young people

A quantitative survey based on the instrument defined in the Delphi study of the WYRED project was adapted to the Brazilian context, not only translated but also some questions were adapted. The purpose of this survey is to quantify which topics are considered most important to young people about the Digital Society. The first survey applied in the WYRED Delphi asked about 12 items and left an open field for young people to indicate the topics they considered important. In the second survey that was applied, a list was created with 15 items based on those identified during the first round; these are the items used in the instrument adapted to the Brazilian context. The survey consists of nine questions, as presented in Table 2, which were applied in

Portuguese using Google Forms. To distinct groups, each class was identified with an ID: 1G, 1J, 1N, 1X.

Table 2. Survey. Based on [20, 21].

Q1. What are the issues related to young people that you consider most important and you think that our project should deal with? *(Likert scale: 1-Not important, 2-Slightly important, 3-Moderately important, 4-Important, 5-Very important)*

1. Self-image, self-confidence	9. Integration of migrants/refugees in schools and in the society
2. Tolerance to different cultures/opinions	
3. Necessary changes in education	10. Adult misunderstandings of young people
4. Causes of stress among young people	11. Reliability of information on the Internet and social media
5. Employment prospects	
6. Cyber-bullying, shaming	12. Roles of parents, friends and peer groups
7. Internet safety & privacy	13. Environmental problems (e.g. pollution)
8. Gender stereotypes / discrimination	14. Crime
	15. Mental wellbeing

Q2. Gender: Female; Male; Not mentioned above; No answer

Q3. Which is your year of birth?

Q4. What country were you born in?

Q5. Color skin / race: White; Black; Pardo; Asian; Indigenous.

Q6. Who is the person who brings the most income to the family?
(You; Your father; Your mother; Other relative; Other person)

Q7. What is the highest level of education attained by the person who contributes the most income to the family unit?

No studies
Elementary School I
Elementary School II
High school
Technologist, Degree, Bachelor's Degree
Postgraduate (Specialization, Master, Doctorate)
Don't know / Don't answer

Q8. What is the employment status of the person with the highest income in the household?
(Employee / Employed person; Self-employed person / Self-employed person; Unemployed)

Q9. In which of the following groups does the person who contributes the most income to the family unit work or worked?

Managers and directors
Specialists in intellectual and scientific activities
Technicians and mid-level professions
Administrative employees
Service and sales personnel
Skilled agricultural, forestry and fishing workers
Workers, craftsmen and similar workers
Plant and machinery operators and assemblers
Unskilled workers/ Elementary occupations
Military professions
Other

3.3 Participants

Four different groups were involved, with a total of 95 students between 18 and 33 years old, 13 women (13.68%), 78 men (82.11%), and 4 others (4.21%). The survey was answered by 88 students, 12 women (13.64%), 73 men (82.95%), 2 selected that his gender is non-binary (2.27%), and 1 preferred not to answer (1.14%). Regarding the skin color/race of the sample, 66 are white (75%), 14 are *pardo* (15.91%), 7 are Asian (7.95%), and 1 is black (1.14%).

Through the answers obtained in the survey (Table 2), it was possible to divide the students according to their work interests. The second phase was conducted with all the population. The students established dialogues on the selected topics through a set of communities in the WYRED Platform and during a face-to-face session in each class.

4 Results

As a first step in the analysis process, the descriptive statistics of the answers of the students were calculated (Table 3). Furthermore, the results were calculated per student group.

Table 3. Results of the descriptive analysis

	N	Min	Max	Mean	sx
Self-image, self-confidence	88	1	5	**4,28**	0,83
Tolerance to different cultures/opinions	86	1	5	**4,55**	0,762
Necessary changes in education	87	3	5	**4,43**	0,676
Causes of stress among young people	87	1	5	3,91	1,052
Employment prospects	87	2	5	4,1	0,836
Cyber-bullying, shaming	87	1	5	3,92	1,154
Internet safety & privacy	88	1	5	**4,15**	1
Gender stereotypes / discrimination	87	1	5	4,11	1,104
Integration of migrants/refugees in schools and in the society	87	1	5	3,74	1,253
Adult misunderstandings of young people	86	1	5	3,14	1,031
Reliability of information on the Internet and social media	87	1	5	4,08	1,059
Roles of parents, friends and peer groups	88	1	5	3,98	1,039
Environmental problems (e.g. pollution)	87	2	5	4,08	1,037
Crime	87	1	5	4,09	0,923
Mental wellbeing	87	1	5	**4,66**	0,679

The results indicate five topics that were of most significant interest, namely:
- Mental wellbeing.
- Tolerance to different cultures / opinions.
- Necessary changes in education.
- Self-image, self-confidence.
- Internet safety & privacy.

There are some differences among the most valued topics regarding the results per group. In the class 1G, "Crime" and "Environmental problems" appears among the five most valued topics. Regarding the class 1J, appears "Gender stereotypes/discrimination" instead "Internet safety & privacy." In the class 1N, "Reliability of information on the Internet and social media" instead "Self-image, self-confidence." Finally, in the class 1X, emerges the "Roles of parents, friends and peer groups" instead "Internet safety & privacy."

5   Discussion and conclusions

The need for youth participation in discussion and analysis promotes a con-temporary format of transformative involvement in addressing key issues of the Digital Society. Including young people in the process of transforming skills and discussing creative initiatives into knowledge and skills can foster protagonism and drive positive conclusions for the future. This paper aims to promote youth protagonism, enable discussion and interaction on relevant aspects in the Digital Society and present the importance of implementing and consolidating participatory and analytical activities directed at young people, increasing the importance of their opinions and the debates they participate.

The case study transfers an experience based on the results of a project funding by the European Union, to the Brazilian context. In particular, it adapted the WYRED methodological framework in order to identify the main topics that concern Brazilian young people concerning desired social change.

Regarding the most important topics rated by the young people in Brazil, the results are similar to those obtained in Europe (Austria, Belgium, Israel, Italy, Spain, Turkey, United Kingdom). In the European survey, 355 children and young people answer the survey, although 632 respondents submitted answers to part of the questions, namely (in most cases) full answers to the topics rating [21]. The European sample was composed of young people between 15 and 30 years old, 48.7% women and 51.3% men. The most valued topics in Europe were: necessary changes in education; tolerance to different cultures and opinions; mental wellbeing; self-image, self-confidence; and gender stereotypes/discrimination.

Even though the samples are different according to the size and gender balance, the results show a high degree of similarity. Four of the five topics are the same in Brazil and Europe. In Brazil, "Internet safety & privacy" was better rated, while in Europe, there is a particular interest in "gender stereotypes/discrimination".

It is also important to highlight that the topics were better rated in Brazil than in Europe. However, this difference may be related to the survey in Brazil was applied in the same socio-economic and cultural context; meanwhile, in Europe was applied in a heterogeneous context in different countries and regions.

References

1. Kunsch, M.M.K., Kunsch, W.L.: Relações Públicas Comunitárias: A comunicação numa perspectiva dialógica e transformadora. Summus, São Paulo, Brazil (2007)
2. Felice, M.: As formas digitais do social e os novos dinamismos da sociedade contemporânea. Relações Públicas Comunitárias: A comunicação numa perspectiva dialógica e transformadora. Summus, São Paulo, Brazil (2007)
3. Santos, M.E.V.M.: Cidadania, conhecimento, ciência e educação CTS. Rumo a "novas" dimensões epistemológicas. Revista Iberoamericana de Ciencia, Tecnología y Sociedad 6, 137-157 (2005)
4. Mamede, S., Benites, M., Alho, C.J.R.: Ciência Cidadã e sua Contribuição na Proteção e Conservação da Biodiversidade na Reserva da Biosfera do Pantanal. Revbea, São Paulo, V. . Revista Brasileira de Educação Ambiental (RevBEA) 12, 153-164 (2017)
5. Bueno Campos, E., Casani, F.: La tercera misión de la Universidad. Enfoques e indicadores básicos para su evaluación. Economía Industrial 366, 43-59 (2007)
6. García-Peñalvo, F.J.: La tercera misión. Education in the Knowledge Society 17, 7-18 (2016)
7. Vilalta, J.M.: La tercera misión universitaria. Innovación y transferencia de conocimientos en las universidades españolas. Studia XXI. Fundación Europea Sociedad y Educación, Madrid (2013)
8. García-Peñalvo, F.J., Conde, M.Á., Johnson, M., Alier, M.: Knowledge co-creation process based on informal learning competences tagging and recognition. International Journal of Human Capital and Information Technology Professionals (IJHCITP) 4, 18-30 (2013)
9. Ramírez-Montoya, M.S., García-Peñalvo, F.J.: Co-creation and open innovation: Systematic literature review. Comunicar 26, 9-18 (2018)
10. Etzkowitz, H., Leydesdorff, L.: Universities and the Global Knowledge Economy. A triple of a Triple Helix of University-Industry-Government Relations. Pinter, London (1997)
11. García-Peñalvo, F.J., Kearney, N.A.: Networked youth research for empowerment in digital society: the WYRED project. In: García-Peñalvo, F.J. (ed.) Proceedings of the Fourth International Conference on Technological Ecosystems for Enhancing Multiculturality (TEEM'16) (Salamanca, Spain, November 2-4, 2016), pp. 3-9. ACM, New York, NY, USA (2016)
12. García-Peñalvo, F.J.: WYRED Project. Education in the Knowledge Society 18, 7-14 (2017)
13. García-Peñalvo, F.J., García-Holgado, A.: WYRED, a platform to give young people the voice on the influence of technology in today's society. A citizen science approach. In: Villalba-Condori, K.O., García-Peñalvo, F.J., Lavonen, J., Zapata-Ros, M. (eds.) Proceedings of the II Congreso Internacional de Tendencias e Innovación Educativa –

CITIE 2018 (Arequipa, Perú, November 26-30, 2018), pp. 128-141. CEUR-WS.org, Aachen, Germany (2019)

14. Grupo GRIAL: Producción Científica del Grupo GRIAL de 2011 a 2019. Grupo GRIAL, Universidad de Salamanca (2019)

15. GRIAL Group: GRIAL Research Group Scientific Production Report (2011-2017). Version 2.0. GRIAL Research Group, University of Salamanca (2018)

16. Durán-Escudero, J., García-Peñalvo, F.J., Therón-Sánchez, R.: An architectural proposal to explore the data of a private community through visual analytic. In: Dodero, J.M., Ibarra Sáiz, M.S., Ruiz Rube, I. (eds.) Proceedings of the 5th International Conference on Technological Ecosystems for Enhancing Multiculturality (TEEM 2017) (Cádiz, Spain, October 18-20, 2017), vol. Article 48. ACM, New York, NY, USA (2017)

17. García-Peñalvo, F.J., Vázquez-Ingelmo, A., García-Holgado, A.: Study of the usability of the WYRED Ecosystem using heuristic evaluation. In: Zaphiris, P., Ioannou, A. (eds.) Learning and Collaboration Technologies. Designing Learning Experiences. 6th International Conference, LCT 2019, Held as Part of the 21st HCI International Conference, HCII 2019, Orlando, FL, USA, July 26–31, 2019, Proceedings, Part I, pp. 50-63. Springer, Cham, Switzerland (2019)

18. García-Peñalvo, F.J., Vázquez-Ingelmo, A., García-Holgado, A., Seoane Pardo, A.M.: Analyzing the usability of the WYRED Platform with undergraduate students to improve its features. Universal Access in the Information Society 18, 455-468 (2019)

19. WYRED Consortium: WYRED Research Cycle Infographic. WYRED Consortium (2017)

20. Hauptman, A., Soffer, T.: WYRED Delphi Study. Results Report. (2017)

21. Hauptman, A., Kearney, N.A., Raban, Y., Soffer, T.: WYRED Second Delphi Study Results Report. (2018)