education sciences

MDPI

Article

Developing 21st Century Competencies among Youth through an Online Learning Program: BE a Global Citizen

Macarena-Paz Celume [1,2,*] and Haïfat Maoulida [1,2]

[1] Laboratory of Applied Psychology & Ergonomics—LaPEA, University of Paris, 92100 Boulogne-Billancourt, France; haifat.maoulida@u-paris.fr
[2] Beyond Education, Learning Planet Center (LPI, ex CRI), 75004 Paris, France
* Correspondence: macarena-paz.celume@u-paris.fr

Abstract: Background: Within the current labor market, continuously changing and accelerating since the COVID-19 crisis (World Economic Forum, 2021), the educational system must offer a pedagogical alternative to face and anticipate these 21st century changes and demands (OECD, 2018). Based on the four-dimensional education framework, from the Center for Curriculum Redesign (CCR), the online learning literature, and students' perspectives, the Beyond Education (BE) organization has proposed a series of interactive online pedagogical programs aiming to develop 21st-century competencies in school-age students. Methods: The aim of this paper is to propose both quantitative and qualitative data analyses of the first pilot program: "BE a Global Citizen" through a semi-experimental study, using a mixed-method approach, analyzing the pre- and post-tests results of 26 students aged 16 to 18 years old. Results: Analyses presented evidence of the program's efficacy at developing 21st century competencies in students, particularly those competencies targeted by the program, which were significantly increased. Conclusions: Although these are promising results, a replicability study needs to be done on a larger sample in order to generalize the results.

Keywords: 21st century competencies; social and emotional competencies; online learning program; adolescents; global citizen

Citation: Celume, M.-P.; Maoulida, H. Developing 21st Century Competencies among Youth through an Online Learning Program: BE a Global Citizen. *Educ. Sci.* **2022**, *12*, 148. https://doi.org/10.3390/educsci12030148

Academic Editor: Han Reichgelt

Received: 5 January 2022
Accepted: 19 February 2022
Published: 22 February 2022

1. Introduction

The 21st century has shown a disconnection between the education system and the competencies needed in our uncertain job market [1–4]. According to some authors, we live in a more competitive, interdependent world [5,6] that requires an increased capacity for humans to meet complex challenges, agility to adapt to new situations, and a diverse set of competencies adapted to the 21st century [7,8], such as creativity, collaboration, communication and critical thinking. Identifying, developing and assessing these competencies have been goals widely shared by educators and governments all around the world [8–14], highlighting that public policies in youth and child education must focus on the development of these competencies [6].

In this line, global citizenship appears as a 21st century concept that can be defined from different perspectives (for a review see [15]), proposing curiosity [16], critical thinking [17], ethics [18,19], collaboration, and communication [20], as important 21st century competencies within it. Reysen & Katzarska-Miller [21] explained that having global awareness and participating in an environment that praises global citizenship, work as antecedents that mediate the effect on prosocial behaviors, which is consistent with Reimers [22,23] who defined global citizenship as the capacity of empathy and collaboration with people from different national, religious, ethnic, and cultural backgrounds. The WEF [3] explained that this global citizen would have a natural concern for global conflict and peace, while for the OECD [24], the competence of a global citizen might respond to the capacity to understand and appreciate intercultural perspectives. According to the United

Nations [25], education for the 21st century should advocate for sustainable development through the recognition of cultural diversity, developing a set of 21st competencies for global citizenship.

In this line, efforts have been made to achieve this goal, but the recent COVID-19 pandemic changed the rules of learning. According to the WEF [3], our post-pandemic world needs to propose and offer solutions regarding learning and teaching that could be achieved entirely remotely. The need for online learning development appears to have been accelerated because of the health crisis we are currently facing [26] and appears today as one of the solutions to be favored within this educational context. In other words, our current society, particularly the youngest one, might need to develop a new set of competencies, adapted to our century, and using online learning could be key to make them acquire them.

Moreover, the population of school-aged people is often labeled as "digital natives" (Prensky, 2001), i.e., a generation that was born, raised and bred all their lives in the new Information and Communication Technologies (ICT), developing technical competencies and learning preferences for which the educational world might not be adequately equipped to cope. Nevertheless, few empirical studies have shown this inadequacy of the educational system (Bennett et al., 2008). Bennett and collaborators (2008) explain that this acknowledgement is simply a reflection of a "moral panic" phenomenon in which a major public opinion problem, supported mainly by numerous public discourse and media omnipresence, overcomes the evidence that it is a real problem (Cohen, 1972; Thompson, 1998). Then, some even suggest that all we know about this "digital native" comes from common sense and is not valuable (Koutropoulos, 2011). However, no matter what label is given to this generation or the one that followed or preceded it, recent studies and especially the health context of COVID-19 seem to invite us to turn to a form of e-learning, both in terms of classical knowledge formats and those labeled 21st century competencies. Yet, really recent works propose breaking out of the stereotypes maintained around these "digital natives" to go towards an educational practice based on digital literature, taking into account its recommendations and its strengths to deliver a quality education (Smith et al., 2020). The pandemic context that the world is facing nowadays, has pushed us to turn to this form of learning which was inevitable to maintain the educational continuity (McQuirter, 2020). Although it was a challenge to develop solid and effective educational programs, we wished to develop this first online program called "BE a Global Citizen", based on the most recent elements of the scientific literature as recommended. Unfortunately, to our knowledge, no educational program today offers a fully online learning experience ready to teach 21st century competencies for global citizenship.

Be a Global Citizen is an eight-week online program created by the Beyond Education organization based on the four-dimensional education model from the Center for Curriculum Redesign (CCR) [27], targeting five core 21st century competencies: critical thinking, communication, collaboration, curiosity, and ethics; through individual and collective activities. Individual activities are to be completed within twelve sessions in an online platform powered by Dream Shaper. Each session is designed to develop one competency out of the five core competencies targeted by the program proposing a general presentation where the learning objective is described, explaining the relation of the session's objective with the whole BE a Global Citizen program. Then, they have an introductory activity to make them familiar with the learning objective, as other practical activities. As an example, the introductory activity "Share your challenges with us!" of the first individual session (which aimed to develop one of the communication subcompetencies "Asking questions and actively listening"), asks students to share and describe three things they had faced when working with a new group of people. Afterwards, they are given both theoretical and practical insights to use the subcompetency wisely. Each session finishes with reminders of the learning objective, a challenge to practice it in real life, and a reflection question to achieve deeper understanding of the session. Collective activities are divided into ActionLabs carried out in Miro platform, where students solve global issues together through

the Design for Change methodology (DFC) [28]; and an online forum opened through the Discord platform.

We postulate that after following the BE a Global Citizen program, participants will improve their 21st century competencies, particularly the five core competencies targeted by the program.

2. Materials and Methods

2.1. Participants

The 96 participants (between 14 and 21 years) who started the program were recruited from schools in different countries of Europe (e.g., Portugal, Slovakia), Latin America (e.g., Colombia), and Africa (e.g., South Africa). Twenty-six (77% girls, 23% boys) fully completed it. After testing for social desirability, we ended up with a sample of 23 English-speaking students (M = 16.88 years SD = 1.58).

2.2. Procedure

Students were invited to participate in an online study between April and June 2021. Invitations were sent via school principals, presenting the program as a pilot willing to develop 21st century competencies to become global citizens.

After participants agreed to have their data from questionnaires collected, they started the program. A general scale measuring twelve 21st-century competencies was given at the beginning and at the end of the program. Students also completed a program-specific questionnaire, a socio-demographic questionnaire and a lie scale. An anonymized ID was given to each student in order to protect their identity for analysis.

After all pretest questionnaires were finalized, they started the pedagogical pathway. After all activities were finished, post-test questionnaires were carried out. Finally, interviews were carried out with students to discuss their full experience within the program.

2.3. Materials

2.3.1. The Competencies Compound Inventory for the 21st-Century (CCI-21)

A self-reported questionnaire was built based on the competencies defined in the four-dimensional education framework from the Center for Curriculum Redesign. This scale contained four items per competency, for a total of 48 items. Four principal component analyses were performed for all items and each dimension of the competencies (skills, characters, metacognition), making it possible to identify these 3 factors. We then ran a PCA for each competency. Finally, the composite scores for each dimension and for the scale as a whole showed diverse internal consistency ($0.450 < \alpha < 0.936$). It is important to note that a manuscript focusing on the validation of the tool is under review, showing internal consistency analyses that revealed alphas ranging from 0.82 to 0.89 for dimensions, and 0.94 for the global scale, for the 48 item version.

2.3.2. Global Citizenship Questionnaire (GC)

A self-reported questionnaire was built based on the main competencies selected from the four-dimensional education model. Each competency was represented by one or more subcompetencies. This 5-point Likert scale contained two items per subcompetency, for a total of 26 items, 14 measuring a skill, and 12, a characteristic. Two principal component analyses and a reliability analysis were conducted. The composite score for the skills ($\alpha = 0.855$) and for characteristics ($\alpha = 0.881$) dimensions showed excellent internal consistency. Item construction was generated through a consensual procedure where two researchers proposed items that responded to the description of each subcompetency. Once all items were proposed, researchers coded each item in order to give a score (from 0 to 3). Only items with a score of 2 and 3 were retained. Examples of items are: "When I don't know something, I always ask" or "I am always looking to test new things" with possible answers ranging from "Not like me at all" to "Very much like me".

2.3.3. Program Learnings: Satisfaction Questionnaire

At the end of the questionnaire, a set of questions related to their level of satisfaction with the program and some of its elements was proposed. The students positioned their satisfaction with the program on a scale from 1 (not at all satisfied) to 10 (completely satisfied). They could then propose three reasons why they were motivated to stay in the program. Then they could indicate three that they thought could be improved. Finally, students were asked to report what were the main learning points (up to three) that they got from the program. For the purpose of this article, only the last question will be presented (but the previous ones are available upon request).

2.3.4. Social Desirability

We adapted the 13-item short version (Reynolds, 1982) of Crowne and Marlowe's (1960) social desirability scale for youth population. Students completed items measuring their level of social desirability ($\alpha = 0.525$). Scores above 10 were considered not sincere, and thus excluded from analyses.

3. Results

3.1. Data Analyses

3.1.1. Qualitative Data

A thematic analysis [29] was carried out using Tropes and NVivo softwares, in order to search for scenarios and then build categories. We used a collective procedure in order to avoid low inter-judgement agreement.

3.1.2. Quantitative Data

We analyzed the data through paired-sample student-t tests, one-way ANOVA, MANOVA, linear regressions and correlation analyses, using the Jasp 2021 and Jamovi 2021 softwares, to look for significant intraindividual differences as well as independent variable effects. Effect sizes were calculated through Cohen's Delta.

A descriptive analysis was carried out in order to have the frequencies and descriptions of age, gender, country and other independent variables. Pretest questionnaires were presented and completed before joining the program. Post-test questionnaires were carried out once the program was finished. Students with high social desirability scores were excluded from analyses.

This section is divided by subheadings. It should provide a concise and precise description of the experimental results, their interpretation, as well as the experimental conclusions that can be drawn.

3.2. Preliminary Psychometrics of the Scales

The reliability analysis showed high reliability scores for both scales ($\alpha = 0.82$ for CCI-21; $\alpha = 0.92$ for GC). Moreover, for the CCI-21 scale, items as well as the whole scale, presented promising sensitivity results (CCI-21 global score, Sk = −0.12; Kurt = −0.32). We also observed a strong correlation (r = 0.73) between the average scores of GC and CCI-21.

3.3. Development of 21st Century Competencies

3.3.1. CCI-21 General Score

The analysis showed that on general CCI-21 scores, there was a significant difference between pre- and post-test scores, ($t(22) = -3.313$, $p = 0.003$, hd = −0.691). Indeed, participants showed better CCI-21 general average scores at the end of the program (M = 4.16, SD = 0.43) than at the beginning (M = 3.93, SD = 0.48, see Figure 1).

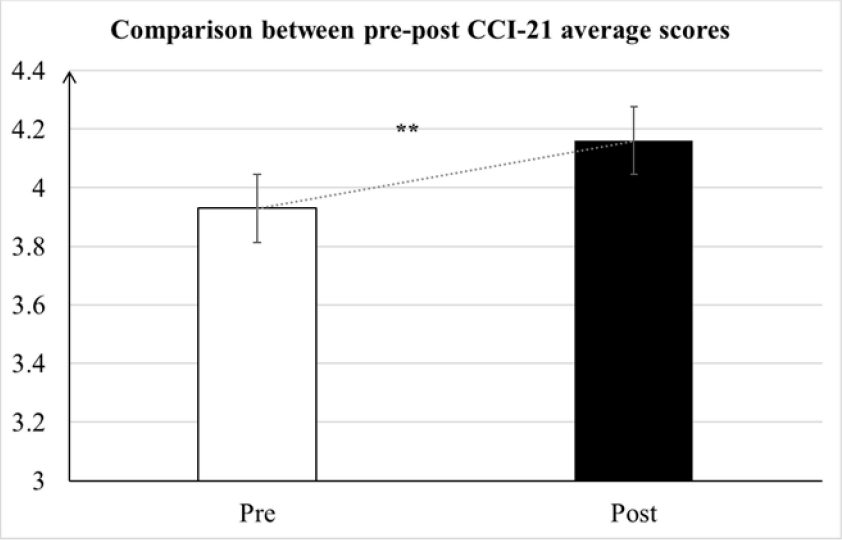

Figure 1. Comparison between pre–post CCI-21 average scores. Note: ** $p < 0.01$.

3.3.2. GC Global Score

The analysis showed that in the general GC scores, there was a significant difference between pre- and post-test scores, (t (22) = −3.568, $p = 0.002$, d = −0.744). Indeed, participants showed better GC average scores at the end of the program (M = 4.18, SD = 0.39) than at the beginning (M = 3.87, SD = 0.54, see Figure 2).

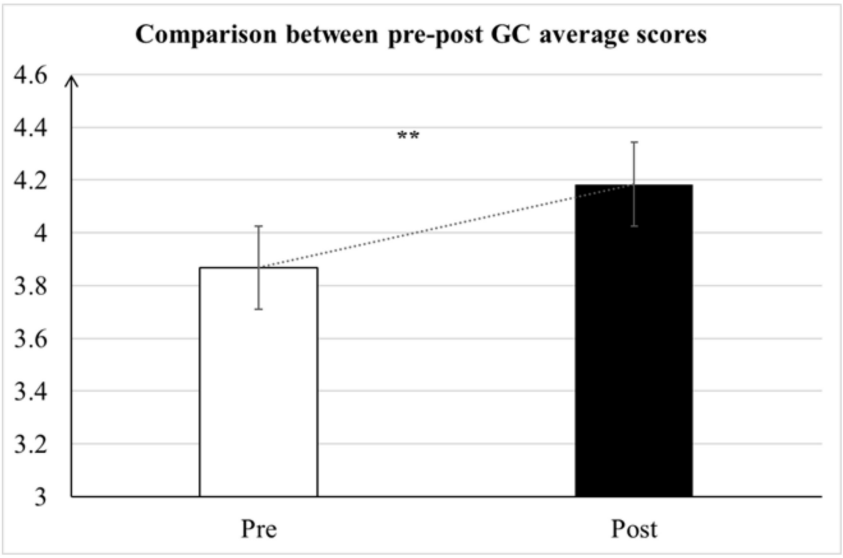

Figure 2. Comparison between pre–post GC average scores. Note: ** $p < 0.01$.

3.3.3. Targeted 21st Century Competencies Scores within the Program

As well as with the average CCI-21 scores, we expected for each targeted dimension (competency) a statistically significant improvement at the post-test. As a reminder, five main competencies were targeted by the GC program from the twelve 21st century competencies from the four-dimensional education framework: critical thinking, communication, collaboration, curiosity and ethics. A paired-sample student-*t* test analysis was carried out to look for significant differences. We present the detailed results below (Table 1).

Table 1. Regression analysis results for each CCI-21 competency.

Expected	t	*p*	d	Unexpected	t	*p*	d
Critical thinking *	−3.21	0.004	−0.67	Creativity *	−2.51	0.02	−0.523
Communication *	−2.42	0.024	−0.51	Mindfulness	−1	0.328	−0.21
Collaboration *	−2.68	0.014	−0.56	Courage	−1.37	0.184	−0.29
Curiosity *	−2.23	0.036	−0.47	Resilience	−1.88	0.073	−0.39
Ethics	−0.68	0.503	−0.14	Leadership *	−3.83	0.001	−0.80
				Metacognition	−1.43	0.167	−0.3
				Growth mindset	−0.70	0.49	−0.15

Note: * for significant increase.

We observed that for four of the five main competencies targeted by the program: the critical thinking (t (22) = −3.210, p = 0.004, d = −0.669), communication (t (22) = −2.421, p = 0.024, d = −0.505), collaboration (t (22) = −2.675, p = 0.014, d = −0.558), and curiosity (t (22) = −2.232, p = 0.036, d = −0.465) scores were significantly higher in the post-test than in the pretest. The graphs below plot this positive difference. However, we did not find a significant difference (t (22) = −0.68, $p > 0.05$, d = −0.142) between the average ethics score in pretest (M = 4.03, SD = 0.57) and in post-test (M = 4.09, SD = 0.58, see Figure 3).

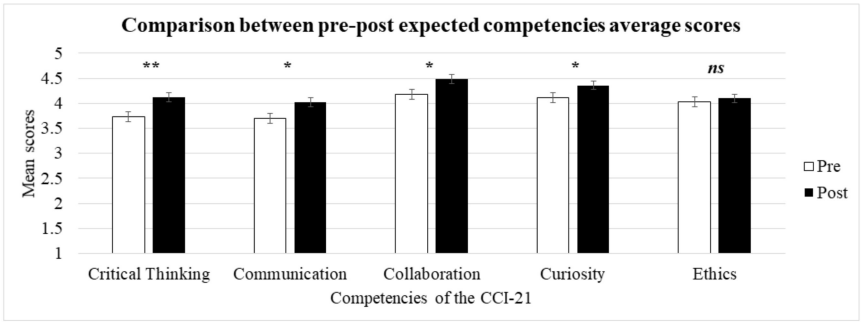

Figure 3. Comparison between pre–post expected competencies' average scores. Note: ns (non-significant) * $p < 0.05$, ** $p < 0.01$.

Only one of the twelve sessions worked on leadership, although scores were significantly increased after the program (t (22) = −3.826, p <0.001, d = −0.798, see Figure 4). We presume that group sessions are related to this result, as this is not the only unexpected competency to be developed, since creativity was also significantly increased between the pretest and the post-test (t (22) = −2.508, p = 0.002, d = −0.523). We hypothesize that these competencies were particularly developed because they were necessary and useful during the group sessions (called in this program Action Labs) allowing their significant increase during the program.

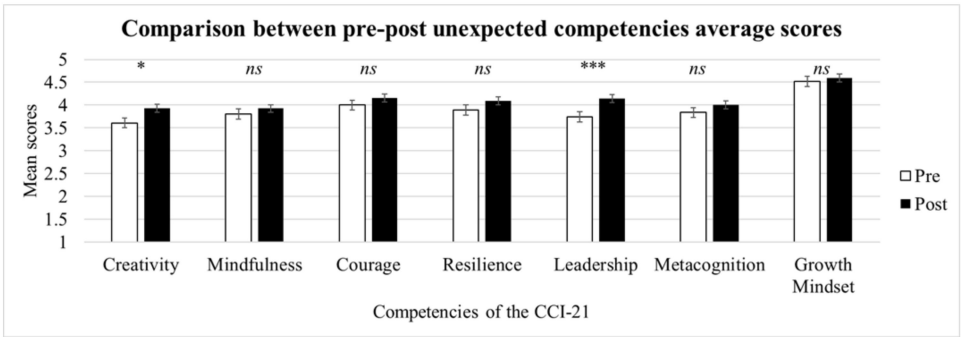

Figure 4. Comparison between pre–post unexpected average scores. Note: ns (non-significant) * $p < 0.05$, *** $p < 0.001$.

3.4. Effects of Age, Gender, Country, and Type of School on Post-Test Results

To test the age and gender effects on the CCI-21 and GC average scores, we conducted independent sample t-test and regression analyses. We also conducted a MANOVA analysis to test the type of school, and country of residence, considering pre-test and post-test scores. When MANOVA was significant, we conducted an ANOVA for pre-test, and then for post-test. If the ANOVA was significant, we ran a post hoc analysis using the Tukey method to test the difference between our variable's modalities/conditions (e.g.: for country, each country is a modality or condition).

Results showed no significant effect of age on CCI-21 average scores ($\beta = 0.278$, $t(22) = 1.328$, $p = 0.198$, $\eta^2 = 0.078$). Results showed no significant effect of gender on CCI-21 post-test average score ($t(21) = -0.500$, $p = 0.620$, $d = -0.277$).

On GC questionnaire scores, results showed no significant effect of age on the GC general average score ($\beta = 0.054$, $t(22) = 0.249$, $p = 0.806$, $\eta^2 = 0.003$). Results showed no significant effect of gender on the GC general post-test average score ($t(21) = -0.640$, $p = 0.806$, $d = -0.354$)

The MANOVA analysis revealed, considering both the pre-test and the post-test, an effect of the type of school on our dependent variables of interest (see Table 2 for details): on CCI-21 average scores ($F(2,20) = 2.66$, $p = 0.047$) and on GC average scores ($F(2,20) = 2.63$, $p = 0.048$).

Table 2. CCI-21 and GC pre-test and post-test scores per country.

	Colombia	Portugal	Slovakia	South Africa
Mean pre CCI-21 (SD)	4.42 (NaN)	3.93 (0.34)	3.74 (0.46)	4.29 (0.34)
Mean post CCI-21 (SD)	4.33 (NaN)	4.45 (0.40)	4 (0.4)	4.41 (0.42)
Mean pre GC (SD)	4.5 (NaN)	4.19 (0.44)	3.65 (0.52)	4.16 (0.46)
Mean post GC (SD)	4.65 (NaN)	4.39 (0.44)	4.1 (0.44)	4.22 (0.28)
N (post-test)	1	2	14	6

ANOVA showed that the type of school had an impact on CCI-21 post-test average scores (mean square = 0.644, $F(2,20) = 4.731$, $p = 0.021$) that already existed on CCI-21 pretest average scores (mean square = 0.986, $F(2,20) = 6.453$, $p = 0.007$). Post hoc analysis showed us that modalities "private and paid school" and "public and free school" on CCI-21 post-test average scores presented a significant difference ($d = 0.511$, $t(20) = 2.952$, Tukey = 0.020) These differences were not found between the modalities "private and free" and "private and paid", nor between "private and free" and "public and free".

From the ANOVA on the GC questionnaire, we can see that type of school had no impact on GC post-test average scores (mean square = 0.330, $F(2,20) = 2.325$, $p = 0.124$) but had one on the GC pretest average scores (mean square = 1.350, $F(2,20) = 7.101$, $p = 0.005$), explaining why we found a significant MANOVA.

3.5. Learning from the Program, Open-Ended Questionnaire

The students shared 23 topics and 9 main categories presented below from the most referenced one, to the least referenced one. The number of references appears in parentheses.

- Collaboration and Teamwork (18), which comes along with perspective taking (6) and making different friends (2). An example of this category can be found in this student who explained: *"Understanding and respecting the perspective of others is essential"*, or this other who said: *"I learnt everyone has different values and responsibilities and therefore their thinking is different."*
- Perseverance and Intrinsic Motivation (16), which comes along with self-efficacy (5) (self-beliefs, self-confidence), passion (3), and curiosity (2). An example of this: *"I learnt that there is always more behind everything and I am so encouraged to ask more and to know more about everything"*.

- Community and Global Citizenship (15), which refers to all things that are either directly related with the work of global citizenship or citizenship, and actions that can be carried out within their communities, environment, countries, societies, etc. For instance, a student said: *"I know I have been able to think before I act and to do the little things that count in my school, home and community." while another explained: "I now know what it means to be a global citizen and what obligations I have to make the world a better and safe space for all"*.
- Self-Discipline and Responsibility (11), which comes along with time management and organisation (4), prioritization (1), consistency (1), and patience (1). An example for this would be: *"I learnt how important time-management is"*, and another: *"we should focus on what is the most important thing out of all, and then work on that one thing instead of trying to cover many things but not in depth"*.
- Empathy (Cognitive and Emotional) (7), which refers to all elements related to understanding others' feelings, or when participants directly mention this trait. For example, we find this student who said: *"I believe that I am more empathetic now thanks to this program"*, or another who responded: *" [I learnt how to] understand people's emotions"*.
- Communication (7), which refers to elements of listening, expressing and communication in general. For instance: *"active listening and communication were probably the best ones"*.
- General Self-Awareness (7), which comes along with setting boundaries (1), and seeking help when needed (1). Examples of this can be found here: *"I learned that I want to be more aware of my strengths so that I can help the people around me"*, or even here: *"know when to seek help when obstacles arise"*.
- English (5), which refers to learning or improving the English language.
- Creative Thinking (3), which refers to mental abilities to diverge, or to find solutions, such as this student who explained having learnt that: *"you can combine ideas and turn them into a much better solution"*.

All students mentioned their expectations were met, and some of them even said they learnt more than expected (see Table 3). One student said he had no clear expectations.

Table 3. Expectations of the program versus real learning and outcomes.

	Expected from the Program	Learnt Obtained
1: Certificate	Yes	Yes
2: English improvement	Yes	Yes
3: Out of school subject	Yes	Yes
4: Problem or challenge solving	Yes	Yes
5: Social and self-development	Yes	Yes
6: Awareness of self and others	Yes	Yes
7: Beyond comfort zone	Yes	Not clear
8: Global citizenship competencies	Yes	Yes
9: Leadership and collaboration	Yes	Yes
10: Perspective taking and critical thinking	Yes	Yes
11: Responsibility	Yes	Not clear
12: Setting boundaries	No	Yes

4. Discussion

The program was designed based on online learning studies, global citizenship literature, and on the CCR four-dimensional education framework. There was a dropout rate of 51% which stands within the range of the common dropout rate found in the literature. We know that online courses have a 10% to 20% higher failed retention rate than traditional classroom environments [30], and thus, online dropout intervals are generally "40% ranging", from 40% to 80% [31] or more recently from 48 to 99% [32].

The results of statistical analyses confirmed that the BE a Global Citizen program allowed students to progress in their 21st century competencies. The BE a Global Citizen program targeted five competencies of the 21st century as defined by the CCR [27]. The first results from the program showed a global increase in the students' 21st century competencies. However, when every competency was evaluated separately, only four out of the five targeted competencies: critical thinking, communication, collaboration and courage, were significantly developed. Ethics competency presents a low increase that does not reach significance. In this line, it might be possible that for Ethics, the program was not adapted for their age, so a review of activities should be carried on. Another possibility could be that they needed more individual sessions concerning ethics to have a significant development of the competency. Indeed, ethics seems to be a competency that requires a deep understanding and reflection that cannot be acquired only through practical activities. In this line, Lau, Hulpe and To [33] showed that after a training program on ethics, students have the ability to memorize the criteria of an ethical decision, to select their preference and to use an ethical decision model (i.e., in their study, the JUSTICE model), however, they did not reach the stage in which they could be creative regarding ethics (i.e., develop new solutions to ethical problems) which is considered fundamental by the authors to establish an internalization process and thus the development of competency. Regarding these results, it appears important to consider adding a step to the ethics activities within the BE a Global Citizen program, by passing from the simple application of the learning, to the complete internalization of an ethical principle through creativity. An alternative could be to add gamified activities on creative problem solving to an ethical issue, as studies have shown how creative problem-solving impacts creative thinking [34]. In this way, by targeting the creative thought applied to ethics, we would be enhancing the internalization of ethics competency.

Results also showed that two competencies were unexpectedly developed: creativity and leadership. We presume that these competencies were particularly developed because they could have been necessary or useful during the collective sessions where students were invited to work collaboratively on a solution towards a global issue. According to the OECD [35], collaborative work has been shown to stimulate group members leading them to be individually and collectively more creative, lead women to leadership positions, and predict leadership behaviors in sports. In this line, on the one hand, leadership, the ability to set ambitious goals and inspire others to follow them in order to accomplish a positive change [27,36], seems to have a direct link with collaboration, through collaborative problem solving [37] and collaborative leadership [38]. Scientific literature has often dwelt on the positive link between these competencies, particularly in the works on collaborative leadership. Raelin [39] explains that when every person of a group participates in decision making, as well as in leadership positions, it helps them to operate as a leader in a collective way. In this line, collaborative leaders would serve the community they belong to by transferring the abilities and knowledge they possess to all the people with whom they collaborate and interact [38].

On the other hand, creativity, the ability to produce something which is new, original, and task adapted [40,41], appears to be linked directly to global citizenship through openness to experience (OtE), a predictor of creativity [42] and everyday creativity [43]. In this line, everyday creativity, the capacity to demonstrate originality in acts of daily life, in contrast to areas identified as traditionally requiring creativity [44,45], has already been shown to present variability thanks to openness to experience in global citizenship [46]. Moreover, within the collective sessions of the program, students needed to work collaboratively in order to solve a global issue. Collaboration is a competency that is in itself underpinned by subcompetencies such as interaction, reflection, role flexibility, and problem solving [47]. Problem solving is directly related to creativity [27], and role flexibility involves flexible thinking, which is an element of creative thinking [48,49]. Regarding leadership, Ofstedal and Dahlberg [47] stated that role flexibility helps the individual to assume a leader role, which could have influenced the leadership competency. In this line, it appears that the

development of both leadership and creativity are not that unexpected when it comes to scientific literature.

Additionally, data collected from interviews showed that most of the participants mentioned that they appreciated the collective aspect of the program and the fact that they could work together with other people around the world and learn how to work collaboratively. Moreover, among all learning described by participants, four of them seem to be the most important ones, of which collaboration and teamwork seem to be the most learnt subjects altogether with a sense of perseverance that was developed during the sessions. When participants describe both collaboration and perseverance, we found a high sense of community behind it which could be related to the fact that they were working on global or community issues.

Finally, the fourth main learning concerned the personal gains they made from the program, which they linked to the ability to respect themselves and others, and to develop self-discipline to achieve their team objectives. Again, this personal learning could also be related to the topic of global citizenship, as this ability could be gained when working together to solve a common issue. In addition, it is important to note that all competencies that were significantly developed were related to the definition and framework of the collective problem solving (CPS) described by the OECD [35] and measured through the Global Competency PISA assessment [6], particularly collaboration and creativity. Moreover, the qualitative analysis of satisfaction questionnaires corroborated these results. In this line, a student shared: "you can combine ideas [from all team members] and turn them into a much better solution", highlighting collaboration and creative thinking as main themes in terms of learning.

Following the recommendations of other studies in the field of online learning [50], we proposed sessions to develop five psychosocial competencies in a multimodal environment in which the participants were actively involved in their learning. The data suggest that an online follow-up by a community manager, and the online community interactions, helped to maintain the students' motivation. The feeling of developing strong and meaningful personal relationships through web discussion within a virtual community [51,52], is a known ingredient of an effective online program, together with synchronous and asynchronous interactions [53].

We are aware of the limits of this study. First of all, analyses were carried out on a very small sample of students, and therefore need to be retested for replicability: the nature of the sample is insufficient to generalize these results, and thus should be only considered within the particular context of this program. A bigger sample is needed in order to be sure that the so far positive results of the program can be replicated in future cohorts. Indeed, this paper presents the results of a full-online program that aimed to develop 21st century competencies in youth. The number of young people registered at the beginning of the study (almost a hundred) reinforced our idea of presenting scientific evidence of the benefits of an online program such as this on a subsequent sample of participants. This is why we decided to conduct a study on this program. Unfortunately, we had a significant dropout rate, higher than expected in our initial hypotheses, as is the case in many online (and even offline) programs where dropout rates vary from 40% to 80% (Smith, 2010), attaining percentages that could rise even to 99% (Jordan, 2015). Regarding this constraint, we decided to analyze different data sources, presenting results that would cross both qualitative and quantitative analyses, seeking for outcomes that would point in the same direction. We are aware that for quantitative results, we present a small sample size, We believe small the sample size, nevertheless, with the use of a mixed method approach allowed us to show how our initial analyses might encourage the creation of similar programs and present some basis to continue the research in the field and to provide more deep understanding of the impact of online-learning when trying to develop non-technical skills, such as 21st century competencies.

Another limit identified is that the scales we used to measure the competencies' development have not yet been validated, although the psychometric analyses carried

out on pre-test data led us to believe that the scale was well constructed. Moreover we have started the validation of the tool on a larger sample (N > 300) of school-aged youths (15–18 years old) in both English and French populations, which is under review and will hopefully be published this year. Internal consistency analyses for the English population revealed alphas ranging from 0.82 to 0.89 for dimensions, and 0.94 for the global scale, for the 48-item version.

On a similar topic, we measured their 21st century competencies using two self-report scales we have developed. We understand that for some researchers, self-report does not provide reliable information regarding competencies or traits development. Nevertheless, even if we have collected participants' self-reported gains and beliefs, we consider that it is a reliable way to measure their development, as this is widely supported by literature. Evidence points to the fact that self-reports are accurate assessments even with school-aged people (for reviews, please see Riley, 2004, and Sturgess, Rodger and Ozanne, 2002). We do understand that self-report can be considered as an imperfect method that has its flaws and limitations, as performance tests do have as well. However, we based the creation of our scales on the Center for Curriculum Redesign (CCR) report recommendations from Bialik and collaborators (2016) that were specially focused on assessments methods for 21st century competencies. In this document, the CCR recognize self-report as one viable way to assess these competencies. Moreover, it presents the VIA-tool as a solid tool to address assessment issues regarding 21st century competencies. For this program, the students felt they have developed a number of 21st century competencies, and scored higher on both the CCI-21 and the program-specific scales after than before the program, suggesting that the students in this program developed 21st century competencies as defined by the CCR.

5. Conclusions

Based on our results, we might offer some (careful) recommendations. First of all, we recommend that the development of educational programs follow an evidence-based approach even if the sample is small. This approach would give hints on the quality and effectiveness of the proposed programs. All details on the construction of the programs and the evaluation should be noted so it can be improved.

Second, the results invite us to encourage other curriculum designers to create online programs to develop 21st century competencies and that which the CCR calls 21st century knowledge. We might turn more to online methodologies as it can help maintain pedagogical continuity in crisis contexts.

Finally, we might recommend combining an asynchronous (i.e., learning through pre-registered support) and a synchronous (i.e., learning with one or more people directly) approach, as every student might need to find their way according to their learning preferences. Here, students were able to work independently on 21st century competencies at their own pace (but within a defined time frame) but also develop competencies through group sessions with the presence of a facilitator at different key points of the project. An online program does not mean the absence of an educator. It is necessary that at times identified by the youth, he or she can turn to a referent. For us, human support is the key to the success of online programs, as previous empirical studies have already highlighted [54–56].

As a final conclusion, the results led us to believe that BE a Global Citizen program has a positive impact on school-aged students: the students developed competencies such as critical thinking, communication, and collaboration, which have been widely identified as key competencies for the 21st century.

Author Contributions: Conceptualization, M.-P.C. and H.M.; methodology, M.-P.C. and H.M.; software, M.-P.C. and H.M.; validation, M.-P.C. and H.M.; formal analysis, M.-P.C. and H.M.; investigation M.-P.C. and H.M.; resources, M.-P.C. and H.M.; data curation, M.-P.C. and H.M.; writing—original draft preparation, M.-P.C. and H.M.; writing—review and editing, M.-P.C. and H.M.; visualization, M.-P.C. and H.M.; supervision, M.-P.C.; project administration, M.-P.C. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Institutional Review Board Statement: According to French law, if no medical intervention was needed in the study, it does not require ethical approval.

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Data Availability Statement: Data is available on request.

Acknowledgments: We would like to thank the youth participants of this study.

Conflicts of Interest: Researchers are part-time collaborators within the organization that provided the program. They insist their scientific integrity should not be questioned.

References

1. CEDEFOP. Réussir à Atteindre les Jeunes et les Adultes "Hors Circuit". 2018. Available online: https://www.cedefop.europa.eu/files/9128_fr.pdf (accessed on 1 August 2021).
2. INSEE. Activité, Emploi et Chômage en 2017. 2018. Available online: https://www.insee.fr/fr/statistiques/3555153#documentation (accessed on 1 September 2021).
3. World Economic Forum. The Pandemic Has Been Hard on Young People. But There Is a Brighter Future Ahead If We Act Now. World Economic Forum via LinkedIn. 2021. Available online: https://www.linkedin.com/posts/world-economic-forum_the-pandemic-has-been-hard-on-young-people-activity-6757963492726255616-todN/ (accessed on 31 August 2021).
4. Kay, K.; Greenhill, V. Twenty-First Century Students Need 21st Century Skills. In *Bringing Schools into the 21st Century*; Wan, G., Gut, D.M., Eds.; Springer: Berlin/Heidelberg, Germany, 2011; Volume 13, pp. 41–65. [CrossRef]
5. Ananiadou, K.; Claro, M. 21st century skills and competences for new millennium learners in OECD countries. *OECD Educ. Work. Pap.* **2009**, *41*, 33. [CrossRef]
6. OECD. The OECD PISA global competence framework Preparing Our Youth for an Inclusive and Sustainable World. 2018. Available online: https://www.oecd.org/education/Global-competency-for-an-inclusive-world.pdf (accessed on 30 August 2021).
7. Trilling, B.; Fadel, C. 21st century skills: Learning for life in our times. Jossey Bass: USA. *J. Chem. Inf. Modeling* **2009**, *53*, 1689–1699.
8. Cimatti, B. Definition, development, assessment of soft skills and their role for the quality of organizations and enterprises. *Int. J. Qual. Res.* **2016**, *10*, 97–130. [CrossRef]
9. Soland, J.; Hamilton, L.S.; Stecher, B.M. *Measuring 21st Century Competencies. Guidance for Educators*; Asia Society, Global Cities Education Network: New York, NY, USA, 2013; Available online: http://asiasociety.org/files/gcen-measuring21cskills.pdf (accessed on 31 March 2021).
10. Chamorro-Premuzic, T.; Arteche, A.; Bremner, A.J.; Greven, C.; Furnham, A. Soft skills in higher education: Importance and improvement ratings as a function of individual differences and academic performance. *Educ. Psychol.* **2010**, *30*, 221–241. [CrossRef]
11. Esmaeilinasab, M.; Malek, M.D.; Ghiasvand, Z.; Bahrami, S. Effectiveness of life skills training on increasing self-esteem of high school students. *Procedia-Soc. Behav. Sci.* **2011**, *30*, 1043–1047. [CrossRef]
12. Prajapati, R.; Sharma, B.; Sharma, D. Significance of Life Skills Education. *Contemp. Issues Educ. Res.* **2017**, *10*, 1–6. [CrossRef]
13. Kyllonen, P.C.; Lipnevich, A.A.; Burrus, J.; Roberts, R.D. Personality, Motivation, and College Readiness: A Prospectus for Assessment and Development. *ETS Res. Rep. Ser.* **2014**, *2014*, 1–48. [CrossRef]
14. Lipnevich, A.A.; Preckel, F.; Roberts, R.D. (Eds.) *Psychosocial Skills and School Systems in the 21st Century*; Springer International Publishing: Berlin/Heidelberg, Germany, 2016. [CrossRef]
15. Goren, H.; Yemini, M. Global citizenship education redefined – A systematic review of empirical studies on global citizenship education. *Int. J. Educ. Res.* **2017**, *82*, 170–183. [CrossRef]
16. Morais, D.B.; Ogden, A.C. Initial Development and Validation of the Global Citizenship Scale. *J. Stud. Int. Educ.* **2010**, *15*, 445–466. [CrossRef]
17. Lim, L. Beyond logic and argument analysis: Critical thinking, everyday problems and democratic deliberation in Cambridge International Examinations' Thinking Skills curriculum. *J. Curric. Stud.* **2011**, *43*, 783–807. [CrossRef]
18. Dower, N.; Williams, J. Global citizenship: A critical introduction. In *Global Citizenship: A Critical Introduction*; Routledge: New York, NY, USA, 2016; pp. 1–294. [CrossRef]
19. Jefferess, D. Global citizenship and the cultural politics of benevolence. *Crit. Lit. Theor. Pract.* **2008**, *2*, 27–36. Available online: http://criticalliteracy.freehostia.com/index.php?journal=criticalliteracy&page=article&op=view&path%5B%5D=5 (accessed on 31 August 2021).
20. Lindner, E. Fostering Global Citizenship. In *Psychological Components of Sustainable Peace*; Springer: New York, NY, USA, 2012; pp. 283–298. Available online: https://doi.org/10.1007/978-1-4614-3555-6_15 (accessed on 2 November 2021).
21. Reysen, S.; Katzarska-Miller, I. A model of global citizenship: Antecedents and outcomes. *Int. J. Psychol.* **2013**, *48*, 858–870. [CrossRef]
22. Reimers, F. *Empowering Students to Improve the World in Sixty Lessons*; CreateSpace Independent Publishing Platform: North Charleston, SC, USA, 2017.

23. Reimers, F. Audacious Education Purposes. In *Audacious Education Purposes. How Government Transform the Goals of Education Systems*; Springer Open: Berlin/Heidelberg, Germany, 2020. [CrossRef]
24. Chernyshenko, O.; Kankaraš, M.; Drasgow, F. Social and emotional skills for student success and well-being: Conceptual framework for the OECD study on social and emotional skills. In *Documents de Travail de l'OCDE sur l'éducation*; Éditions OCDE: Paris, France, 2018; Volume 173. [CrossRef]
25. Sachs, J.; Kroll, C.; Lafortune, G.; Fuller, G.; Woelm, F. *Sustainable Development Report 2021*; Cambridge University Press: Cambridge, UK, 2021. [CrossRef]
26. UNICEF. Unequal Access to Remote Schooling Amid COVID-19 Threatens to Deepen Global Learning Crisis. *Press Release.* 2020. Available online: https://www.unicef.org/press-releases/unequal-access-remote-schooling-amid-covid-19-threatens-deepen-global-learning (accessed on 31 August 2021).
27. Fadel, C.; Bialik, M.; Trilling, B. *Four-Dimensional Education: The Competencies Learners Need to Succeed*; Center for Curriculum Redesign: Boston, MA, USA, 2015; Available online: https://www.researchgate.net/publication/318430582_Four-Dimensional_Education (accessed on 28 February 2021).
28. Design For Change. Educators Toolkit. 2015. Available online: https://globaled.gse.harvard.edu/files/geii/files/toolkit_global.pdf (accessed on 7 September 2021).
29. Braun, V.; Clarke, V. Using thematic analysis in psychology. *Qual. Res. Psychol.* **2006**, *3*, 77–101. [CrossRef]
30. Herbert, M. Staying the Course: A Study in Online Student Satisfaction and Retention. *Online J. Distance Learn. Adm.* **2006**, *9*, 300–317.
31. Smith, B.G. E-Learning Technologies: A Comparative Study of Adult Learners Enrolled on Blended and Online. Ph.D. Thesis, Capella University, Minneapolis, MI, USA, 2010. Available online: https://www.learntechlib.org/p/115478/ (accessed on 31 August 2021).
32. Jordan, K. Massive open online course completion rates revisited: Assessment, length and attrition. *Int. Rev. Res. Open Distrib. Learn.* **2015**, *16*, 341–358. [CrossRef]
33. Lau, C.; Hulpke, J.F.; To, M.; Kelly, A. Can Ethical Decision Making be Taught? The JUSTICE Approach. *Soc. Responsib. J.* **2007**, *3*, 3–10. [CrossRef]
34. Russ, S.W.; Kaugars, A.S. Emotion in Children's Play and Creative Problem Solving. *Creativity Res. J.* **2001**, *13*, 211–219. [CrossRef]
35. OECD; Center for Opportunity and Equity. PISA 2015 Collaborative Problem Solving Framework. In *PISA 2015 Assessment and Analytical Framework: Science, Reading, Mathematic, Financial Literacy and Collaborative Problem Solving*; OECD Publishing: Paris, France, 2017; pp. 131–189. [CrossRef]
36. Trilling, B.; Fadel, C. 21st century skills: Learning for life in our times. In *21st Century Skills: Learning for Life in Our Times*; John Wiley & Sons: Hoboken, NJ, USA, 2009.
37. Pollastri, A.R.; Ablon, J.S.; Hone, M.J.G. *Collaborative Problem Solving: An Evidence-Based Approach to Implementation and Practice*; Springer International Publishing: Berlin/Heidelberg, Germany, 2019.
38. Roberts, C.; Coghlan, D. Concentric collaboration: A model of leadership development for healthcare organizations. *Action Learn. Res. Pract.* **2011**, *8*, 231–252. [CrossRef]
39. Raelin, J. Does Action Learning Promote Collaborative Leadership? *Acad. Manag. Learn. Educ.* **2006**, *5*, 152–168. Available online: https://ssrn.com/abstract=1313988http://amle.aom.org/content/5/2/152.abstractElectroniccopyavailableat:https://ssrn.com/abstract=1313988 (accessed on 31 August 2021). [CrossRef]
40. Sternberg, R.J.; Lubart, T.I. The concept of creativity: Prospects and paradigms. In *Handbook of Creativity*; Sternberg, R., Ed.; Cambridge University Press: Cambridge, UK, 1999; pp. 3–15. Available online: https://www.scirp.org/(S(351jmbntvnsjt1aadkposzje))/reference/ReferencesPapers.aspx?ReferenceID=355886 (accessed on 1 September 2021).
41. Lubart, T.; Sternberg, R.J. An Investment Approach to Creativity: Theory and Data. In *The Creative Cognition Approach*; Smith, S.M., Ward, T.B., Finke, R.A., Eds.; The MIT Press: Cambridge, MA, USA, 1995; pp. 271–302.
42. Tan, C.S.; Lau, X.S.; Kung, Y.T.; Kailsan, R.A. Openness to Experience Enhances Creativity: The Mediating Role of Intrinsic Motivation and the Creative Process Engagement. *J. Creat. Behav.* **2019**, *53*, 109–119. [CrossRef]
43. Silvia, P.J.; Beaty, R.E.; Nusbaum, E.C.; Eddington, K.M.; Levin-Aspenson, H.; Kwapil, T.R. Everyday Creativity in Daily Life: An Experience-sampling Study of "little c" Creativity. *Psychol. Aesthetics, Creativity, Arts* **2014**, *8*, 183–188. [CrossRef]
44. Kaufman, J.C.; Beghetto, R.A. Beyond Big and Little: The Four C Model of Creativity. *Rev. Gen. Psychol.* **2009**, *13*, 1–12. [CrossRef]
45. Ivcevic, Z.; Brackett, M.; Mayer, J. Emotional Intelligence and Emotional Creativity. *J. Personal.* **2007**, *75*, 199–236. [CrossRef] [PubMed]
46. Tidikis, V.; Dunbar, N.D. Openness to experience and creativity: When does global citizenship matter? *Int. J. Psychol.* **2019**, *54*, 264–268. [CrossRef] [PubMed]
47. Ofstedal, K.; Dahlberg, K. Collaboration in Student Teaching: Introducing the Collaboration Self-Assessment Tool. *J. Early Child. Teach. Educ.* **2009**, *30*, 37–48. [CrossRef]
48. Runco, M.A.; Albert, R.S. The Threshold Theory Regarding Creativity and Intelligence: An Empirical Test with Gifted and Nongifted Children. *Creat. Child Adult Q.* **1986**, *11*, 212–218. Available online: https://eric.ed.gov/?id=EJ352538 (accessed on 1 September 2021).
49. Runco, M.A.; Okuda, S.M.; Thurston, B.J. The Psychometric Properties of Four Systems for Scoring Divergent Thinking Tests. *J. Psychoeduc. Assess.* **1987**, *5*, 149–156. [CrossRef]

50. Mayer, R.E. Introduction to multimedia learning. In *The Cambridge Handbook of Multimedia Learning*, 2nd ed.; Mayer, R.E., Ed.; Cambridge University Press: Cambridge, UK, 2014. [CrossRef]
51. Rheingold, H. *The Virtual Community*; Secker and Warburg: London, UK, 1993; Available online: https://people.well.com/user/hlr/vcbook/index.html (accessed on 25 August 2021).
52. Franklin, B.; Hamer, M.; Hanna, M.; Kinsey, M.; Richardson, J.E. Virtual Community. In *Key Concepts in Journalism Studies*; Sage: Newbury Park, CA, USA, 2012; p. 273. [CrossRef]
53. Hofman, J. Building Success for E-Learners. In *Learning Circuits*; Brush Farm Corrective Services Academy: Eastwood, Australia, 2003.
54. Demmans Epp, C.; Phirangee, K.; Hewitt, J. Student actions and community in online courses: The roles played by course length and facilitation method. *Online Learn. J.* **2017**, *21*, 53–77. [CrossRef]
55. Ferguson, J.M.; DeFelice, A.E. Length of online course and student satisfaction, perceived learning, and academic performance. *Int. Rev. Res. Open Distance Learn.* **2010**, *11*, 73–84. [CrossRef]
56. Mayer, R.E. Thirty years of research on online learning. *Appl. Cogn. Psychol.* **2019**, *33*, 152–159. [CrossRef]