

JSPO / Games2Guide Project Report

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JSPO Project Report

Introduction

The JSPO project (Jeux Sérieux et Pratiques d'Orientation) aims to support optimum use of serious games by encouraging the use of effective game based devices, notably targeting those at risk of social and economic exclusion. The JSPO project focuses on the possibilities of using serious games in career guidance practice.

Each partner chose a serious game corresponding to the characteristics of a certain target group. The game was then evaluated according to a shared protocol. UNIFI (Italy), ONISEP (France) and AEVA (Portugal) chose to target school pupils whilst FASE (Spain) and Aspire-igen (UK) chose NEETs (not in education, employment or training). The shared protocol consisted of a standard evaluation method (qualitative and quantitative) to measure the effectiveness of the game (results captured before and after), comparing a pilot group and a control group.

The results of the evaluation for each country are presented below :

UNIFI (Italy)

Method

Participants

The target group of UNIFI was secondary school pupils (16-19 year olds). The pilot group consisted of 62 participants and the control group consisted of 30 participants.

Quantitative Evaluation

Life Project Reflexivity Scale (LPRS ; Di Fabio, Maree and Kenny, 2018). The LPRS is made up of 15 items on a Likert scale of 5 points (from 1 = Strongly Disagree to 5 = Strongly Agree). The scale gives scores in three distinct dimensions : *Authenticity* (for example, my future life plans are driven by my values) ; *Acquiescence* (for example, my career plans are driven by the values of the society in which I live, rather than by my own values) ; *Clarity/Projectuality* (for example, my future life plans are clearly defined). The Cronbach coefficient alpha are: .86 for the Authenticity dimension; .83 for the Acquiescence dimension; and .89 for the Clarity/Projectuality dimension. Simultaneous validation was established in terms corresponding to the Meaningful Life Measure (MLM, Morgan & Farsides, 2009) (.56 Authenticity dimension; .06 Acquiescence dimension; .53 Clarity/projectuality dimension) and with the Authenticity Scale (Wood, Linley, Maltby, Baioussis, & Joseph, 2008) (.39 authenticity dimension; .05 Acquiescence dimension; .29 Clarity dimension).

Qualitative Evaluation

Future Career Autobiography (FCA, Rehfuss, 2009). The FCA allows an in depth discovery of personal and professional motives, values and direction before and after the career intervention. The FCA includes the following questions : where do you hope to be in life and where do you see yourself professionally in 5 years time? (Rehfuss, 2009).

The comparison of initial and subsequent FCAs can be done by considering the following eight degrees of change identified by Rehfuss (2009): 1) General Fields and Desires to Specification and Exploration theme; 2) General Interests to More Specification theme; 3) Nondescript "Job" to Specification theme; 4) Disregard to Direction theme; 5) Vagueness to Focus theme; 6) Hindered to Hopeful theme; 7) Fixation to Openness theme; 8) Stagnation theme.

Life Adaptability Qualitative Assessment (LAQuA, Di Fabio, 2015). The LAQuA evaluates adaptability (Savickas, 2001, 2005), by detecting a change or lack of change in individual narratives before and after an intervention. The LAQuA is composed of 12 questions, with three questions per category (Concern, Control, Curiosity, Confidence) of the inventory of career adaptability capacities – international version 2.0 (Savickas & Porfeli, 2012). The responses to the 12 questions are compared before and after the intervention against 24 qualitative indicators: six for each of the four dimensions (Concern, Control, Curiosity, Confidence) of the inventory of career adaptability capacities – international version 2.0 (Savickas & Porfeli, 2012). Analysis of the narratives was carried out across these qualitative indicators organised by the LAQuA coding system, divided into five qualitative analysis change categories at different levels of reflexivity (Increased Reflexivity, Revised Reflexivity, Open Reflexivity, Improved Reflexivity and No change) (Di Fabio, 2015).

In detail, the Increased Reflexivity category appears when the narrative produced before the intervention has one or several descriptors and in the narrative produced after the intervention has several identical descriptors that show a more in-depth reflexivity (in the presentation of the descriptor). The Revised Reflexivity category appears when the narrative produced before the intervention has one or several descriptors, and in the narrative produced after the intervention the previous descriptor or descriptors disappear and new different descriptors appear. The Open Reflexivity category appears when the narrative produced before the intervention has one or several descriptors and the narrative produced after the intervention has several identical descriptors (with the same level of reflexivity in the presentation of the newer/different descriptors). The Improved Reflexivity category appears when the narrative produced before the intervention has one or several descriptors and the narrative produced after the intervention has several identical descriptors that go more in depth, with new/different descriptors. The No Change category appears when the narrative produced before the intervention has one or several descriptors and the narrative produced after the intervention has several identical descriptors (with the same level of reflexivity in the presentation of the descriptor).

Procedure

UNIFI (Italy) chose to evaluate Gem Guidance and Entrepreneurship Mindsets through Games (<http://www.gemgame.eu>). GEM is an online game which allows users to explore a diverse range of professions and general competences in a fun and engaging way. It allows students to improve their awareness of important competences for their future career, including teamwork, taking initiative, creativity, problem solving, taking responsibility and determination.

Evaluation of the effectiveness of the serious game consisted of both a pilot group and a control group, qualitative and quantitative evaluation tools at T1 (before testing the game) and T2 (after using the game).

More specifically, the evaluation plan is articulated as follows :

A) A pilot group (students who actively test the game; 62 students in this case) ; a control group (students who continue normal activities who do not test the game; 30 students in this case).

a) Application of a quantitative measure -the Life Project Reflexivity Scale (LPRS ; DiFabio, Maree and Kenny, 2018) on the pilot group and control group, at two separate points in time (LPRS) : at T1 (before testing the game) and T2 (after using the game)

B) A sub sample of 15 students from the pilot group; a sub sample of 15 students from the control group.

b) Application of qualitative tools (*Future Career Autobiography*, FCA, Rehfluss, 2009, Italian version by Rehfluss & DiFabio, 2012; *Life Adaptability Qualitative Assessment*, LAQuA, DiFabio, 2015) of the pilot and control groups at T1 (before testing the game) and T2 (after using the game).

Data Analysis

Quantitative Data Analysis

For UNIFI (Italy) who had both a pilot and control group at T1 and T2 of at least 30 participants for each, parametric statistics were carried out. In particular, a one-way analysis of variance (ANOVA) was used to find any significant differences between the average evaluation of the pilot and the control group at T1. In addition, to evaluate the effect of the intervention, the ANOVA evaluation was repeated with a variable (time : T1/T2) carried out for the pilot group and the control group. The pilot group also repeated the ANOVA evaluation with an independent variable between the subjects (pilot group/control group) and a variable in the subjects (time: T1 / T2). The threshold was set at $p \leq 0,05$.

Qualitative Data Analysis

For the pilot group and the control group, the initial and final responses of each participant on the FCA and the LAQuA were matched for narrative comparison purposes; this was carried out by two independent expert evaluators. An analysis of the reliability between the two assessments aided by the Kappa statistic was used to determine the coherence between the evaluators. An χ^2 test was also used to determine if the evident changes were significantly different. The threshold was set at $p \leq 0,05$.

Quantitative Analysis Results

UNIFI (Italy) ANOVA

At T1, the ANOVA analysis did not reveal any significant differences between the pilot group and the control group concerning the three dimensions of the LPRS. The following results were obtained : Authenticity ($F_{(1, 90)} = 1,20$, $p = .277$), Acquiescence ($F_{(1, 90)} = .89$, $p = .349$), Clarity/Projectuality ($F_{(1, 90)} = .22$, $p = .637$) (table 1). The result is an important prerequisite for carrying out a comparison between the pilot group and the control group.

Table1 - UNIFI (Italy) one-way analysis of variance (ANOVA) analysis

	Pilot group ($n= 62$)	Control group ($n= 30$)	$F_{(1, 90)}$	p
	M	M		
Authenticity LPRS	19.42	20.07	1.20	.277
LPRS Acquiescence	16.27	17.17	.89	.349
Clarity/projectuality of the LPRS	14.34	14.80	.22	.637

UNIFI (Italy) ANOVA measures repeated with a variable (time : T1/T2)

The ANOVA evaluation repeated with a time variable (time: T1/T2) for the pilot group and the control group showed the following results, underlining significant differences for the pilot group only, in each of the three LPRS dimensions. The results for the pilot group were as follows : Authenticity ($F_{(1, 61)} = 26,75$, $p < .001$), Acquiescence ($F_{(1, 61)} = 18,08$, $p < .001$), Clarity/Projectuality ($F_{(1, 61)} = 43,37$, $p < .001$) (Table 2).

The results for the control group were as follows : Authenticity ($F_{(1, 61)} = 0,50$, $p = .818$), Acquiescence ($F_{(1, 61)} = 0,30$, $p = .870$), Clarity/Projectuality ($F_{(1, 61)} = 0,61$, $p = .443$) (Table 3).

Table 2 - UNIFI (Italy) ANOVA evaluation repeated with a pilot group variable (time : T1/T2)

	Pilot group ($n= 62$)		$F_{(1, 61)}$	p
	T1 M	T2 M		
Authenticity LPRS	19.42	21.35	26.75	.001
LPRS Acquiescence	16.27	18.73	18.08	.001
Clarity/projectuality of the LPRS	14.34	17.97	43.37	.001

Table 3 - UNIFI (Italy) ANOVA evaluation repeated with a control group variable (time : T1/T2)

	Control group	$F_{(1, 61)}$	p

	(n= 30)			
	T1 M	T2 M		
Authenticity LPRS	20.07	20.13	0.50	.818
LPRS Acquiescence	17.17	17.23	0.30	.870
Clarity/projectuality of the LPRS	14.80	15.17	0.61	.443

UNIFI (Italy) ANOVA evaluation repeated with an independant variable between the subjets (pilot group/control group) and atime variable (time: T1/T2)

The ANOVA evaluation repeated with an independant variable between the subjets (pilot group/control group) and a time variable (time: T1/T2) gave significant statistical differences between the pre-test and post-test results for the pilot group revealed by the three dimensions of the LPRS: Authenticity ($F_{(3, 88)} = 10, 56, p < .01$), Acquiescence ($F_{(3, 88)} = 7, 40, p < .01$), Clarity/Projectuality ($F_{(3, 88)} = 14, 44, p < .001$) (Table 4).

Table 4 - UNIFI (Italy) ANOVA evaluation repeated with an independant variable between the subjets (pilot group/control group) and a time variable (time: T1/T2)

	Pilot group (n= 62)		Control group (n= 30)		$F_{(3, 88)}$	<i>p</i>
	T1 M	T2 M	T1 M	T2 M		
LPRS Authenticity Time*groupe	19.42	21.35	20.07	20.13	10.56	.002
LPRS Acquiescence Time *groupe	16.27	18.73	17.17	17.23	7.40	.008
LPRS Clarity/Projectuality Time *group	14.34	17.97	14.80	15.17	14.44	.001

Qualitative Data Analysis Results

Future Career Autobiography (FCA)

The analysis of the Future Career Autobiography is as follows :

On the personal plan, 12 participants (80 %) in the pilot group showed changes and 3 participants (20 %) showed a stagnation, where as 2 participants (13,13 %) showed changes and 13 participants (86,87 %) showed stagnation in the control group. The χ^2 test revealed that the differences between the pilot group and the control group were statistically significant ($\chi^2 = 13,93, p < .001$). The reliability between judgements was determined at Kappa = .84 ($p < .001$).

For the personal action plan, 13 participants (86,87 %) in the pilot group showed changes and 2 participants (13,13 %) showed a stagnation, whereas in the control group, 1 participant (6,67 %) showed changes and 14 participants (93,33 %) showed a stagnation. An χ^2 test revealed significant differences between the pilot group and the control group ($\chi^2=19,29$, $p < .001$). The reliability between judgements was determined at Kappa = .83 ($p < .001$).

Below are some examples of qualitative results following the degrees of professional change themes identified in the FCA analysis of the pilot group. For example, at a personal level: in a first FCA "Living on my own" and in a following FCA "Living on my own because it is very important for me to be independent from my parents" (1. General Fields and Desires to Specification and Exploration theme, which describe a transition from general fields and desires to specific ideas); in a first FCA "In a house" and in the following FCA "I hope to live in the town where I was born because I am close to my friends and family. I have reflected and it's right for me" (4.) Distrust of career guidance, where the clients ignore aspects of life and career in their initial FCA and are apparently incapable of finishing the task. Nevertheless, in their subsequent FCA, they accomplish the same task with precision and guidance (5). At a professional level: in a first professional FCA "PE teacher" and in the following FCA "I hope to be a PE teacher because I would like to have a stable job which also allows me time to dedicate to my family and friends. Furthermore, this job appeals to my passion for sport" (1. General Fields and Desires to Specification and Exploration theme); in a first professional FCA "A modest job that I like" and in a following FCA "I hope to study chemistry or medicine at university" (3. Nondescript "Job" to Specification theme, where the initial FCAs of participants start with general themes then focus on personal and professional themes).

LAQuA Qualitative Evaluation

LAQuA analysis revealed the following:

Concerning Concern in the pilot group, 12 participants (80,00 %) showed changes and 3 participants (20 %) showed no change, whereas in the control group 1 participant (6,67 %) showed changes and 14 of the participants 14 (93,33 %) did not show any change. The χ^2 test revealed that the differences between the pilot group and the control group were statistically significant ($\chi^2=16,43$, $p < .001$). The reliability between judgements was determined at Kappa = .83 ($p < .001$).

Concerning Control, in the pilot group 14 participants (93,33 %) showed changes, and 1 participant (6,67 %) showed no change, whereas in the control group, 6 participants (40,00 %) showed changes and 9 participants (60,00 %) showed no change. The χ^2 test revealed that the differences between the pilot group and the control group were statistically significant ($\chi^2=9,60$, $p < .01$). The reliability between judgements was determined at Kappa = .85 ($p < .001$).

Regarding Curiosity, in the pilot group 12 participants (80,00%) showed changes and 3 participants (20,00 %) showed no change, whereas in the control group 6 participants (40,00 %) showed changes and 9 participants (60,00%) showed no changes. The χ^2 test revealed that the differences between the pilot group and the control group were statistically significant

($\chi^2=5,00$, $p < .05$). The reliability between judgements was determined at Kappa = .83 ($p < .001$).

Regarding Confidence, in the pilot group 14 participants (93,33 %) showed changes and 1 participant (6,67 %) showed no change, whereas in the control group, 5 participants (33,33 %) showed changes and 10 participants (66,67 %) showed no change. The χ^2 test revealed that the differences between the pilot group and the control group were statistically significant ($\chi^2=11,63$, $p < .001$). The reliability between judgements was determined at Kappa = .84 ($p < .001$).

Below are some examples of changes demonstrated in the qualitative analysis (for the four dimensions of career adaptability - concern, control, curiosity, confidence) in the pilot group.

Concern. In the narrative before using the game (T1) : 1a) "Knowing what to do in the future or working to get there." 1b) "No" 1c) "Because I don't know what I want to do" (Anticipate). In the narrative after using the game : 1a) "Knowing what you want to do in future." 1b) "Not sure at all" 1c) "Because I don't know exactly what I want to do. Today, I am going backwards and perhaps it could be important to do something using my passion for sport." (Identical descriptor but more in depth reflexivity: Anticipation). Increased reflexivity. Type I : in the narratives produced after the session, we have one or several identical descriptors but they are presented with a more in depth reflexivity.

Control. In the narrative before using the game (T1) : 2a) "If you're wrong about your future career, it's your responsibility." 2b) "I hope." 2c) "Because I want to decide." (Qualitative descriptor: Conscience-Taking responsibility for actions). In the narrative after using the serious game: 2a) "This means taking responsibility for your actions to build your future career" 2b) "Yes." 2c) "Because today, I understood that it's an important competence." (Identical descriptor but with a more in depth reflexivity: Conscience-taking responsibility for actions). Increased reflexivity. Type I : in the narratives produced after the intervention, we have one or several identical descriptors but they are presented with a more in depth reflexivity.

Curiosity. In the narrative before using the serious game (T1): 3a) "Opening more doors for the future." 3b) "I hope so" 3c) "To be able to choose." (Qualitative descriptor : Research). In the narrative after using the serious game 3a) "To open up more possibilities for the future" 3b) "I hope so" 3c) "Because today, I understood that it is important to study the options before making a choice." (Identical descriptor : Research; a new descriptor : Curious). Open minded. In the narratives produced after the session, we found the same identical descriptor(s) as the narratives before the session and with the same level of reflexivity, but a new descriptor appears as well.

Confidence. In the narrative before using the game (T1) : 4a) "Believe in your own abilities and use them" 4b) "No" 4c) "Because I don't believe in my own abilities." (Qualitative descriptor: Capable). In the narrative after using the serious game 4a) "Believe in your own capabilities" 4b) "Not really" 4c) "Because I don't believe in my capabilities at all, even if today I reflected and I understood that I had important capabilities to build my future and that I can also learn new competences". Open mindedness. In the narrative after using the serious game, we found

the same identical descriptor(s) as the narratives before the session and with the same level of reflexivity, but new descripteurs appear aswell.

Discussion of the Results

Discussion of the Quantative Results

Life Project Reflexivity Scale (LPRS)

Regarding the quantitative results of the Italian participants, there is an apparent increase in the three dimensions of the LPRS in the pilot group compared with the control group. After using the game, students showed more authenticity in their awareness of their career plans based upon their values and most authentic sense of self, and reported less 'acquiescence' in terms of not being inclined to passively accept career paths 'directed by others'. They also reported more clarity/projectuality of personal career planning including the implications of choices and decisions (Di Fabio et al. , 2018). The use of serious games seems to increase the reflexivity of students concerning their career and life plans in three dimensions, in particular in the Clarity/Projectuality dimension relative to the clarity of personal career plans and taking into account the implications of choices and decisions (Di Fabio et al., 2018).

Discussion of Qualitative Results

Future Career Autobiography (FCA)

The chosen game showed an increase in the FCA themes of changes in both personal and professional areas. This movement of themes showed a change in narrative of participants after completing the session; a change reflecting development of self and own life/work objectives, indicating a greater awareness and a clearer description in line with the quantitative results which highlighted a greater reflexivity. In the pilot group, regarding the theme of change, a prevalence of the theme 1 (General Fields and Desires to Specification and Exploration theme) is apparent both on a personal and professional level. On the contrary, in the control group only 1 student out of a total 15 showed a change independently of the game.

Qualitative LAQuA evaluation

The results obtained by LAQuA narrative changes of the pilot group in aspects of career adaptability at T2 (after using the game) whereas the control group did not show any changes. The pilot group showed significant changes in the four aspects of career adaptability (Savickas, 2001 ; Savickas & Porfeli, 2012) : The Concern aspect refers to the way in which we receive guidance towards our own future. The Control aspect refers to what extent people feel responsible and capable of determining their own career. The Curiosity aspect refers to a particular capability to explore diverse work possibilities present in community belonging according to our own aptitudes and interests. The Confidence aspect refers to the confidence necessary to be able to pursue our own professional aspirations and objectives, even faced with obstacles and barriers. In particular, the pilot group showed changes in the Control and Confidence aspects.

ONISEP (France)

Method

Participants

The target group for ONISEP (France) was French REP school pupils(14-15 years). The test group was comprised of 23 participants and the control group of 16 participants.

Quantitative Evaluation

Life Project Reflexivity Scale (LPRS ; Di Fabio, Maree and Kenny, 2018). The LPRS is made up of 15 items on a Likert scale of 5 points (from 1 = Strongly Disagree to 5 = Strongly Agree). The scale gives scores in three distinct dimensions : *Authenticity* (for example, my future life plans are driven by my values) ; *Acquiescence* (for example, my career plans are driven by the values of the society in which I live, rather than by my own values) ; *Clarity/Projectuality* (for example, my future life plans are clearly defined). The Cronbach coefficient alpha are: .86 for the Authenticity dimension; .83 for the Acquiescence dimension; and .89 for the Clarity/Projectuality dimension. Simultaneous validation was established in terms corresponding to the Meaningful Life Measure (MLM, Morgan & Farsides, 2009) (.56 Authenticity dimension; .06 Acquiescence dimension; .53 Clarity/projectuality dimension) and with the Authenticity Scale (Wood, Linley, Maltby, Baliousis, & Joseph, 2008) (.39 authenticity dimension; .05 Acquiescence dimension; .29 Clarity dimension).

Qualitative Evaluation

Future Career Autobiography (FCA, Rehfuss, 2009). The FCA allows an in depth discovery of personal and professional motives, values and direction before and after the career intervention. The FCA includes the following questions : where do you hope to be in life and where do you see yourself professionally in 5 years time? (Rehfuss, 2009).

The comparison of initial and subsequent FCAs can be done by considering the following eight degrees of change identified by Rehfuss (2009): 1) General Fields and Desires to Specification and Exploration theme; 2) General Interests to More Specification theme; 3) Nondescript "Job" to Specification theme; 4) Disregard to Direction theme; 5) Vagueness to Focus theme; 6) Hindered to Hopeful theme; 7) Fixation to Openness theme; 8) Stagnation theme.

Life Adaptability Qualitative Assessment (LAQuA, Di Fabio, 2015). The LAQuA evaluates adaptability (Savickas, 2001, 2005), by detecting a change or lack of change in individual narratives before and after an intervention. The LAQuA is composed of 12 questions, with three questions per category (Concern, Control, Curiosity, Confidence) of the inventory of career adaptability capacities – international version 2.0 (Savickas & Porfeli, 2012). The responses to the 12 questions are compared before and after the intervention against 24 qualitative indicators: six for each of the four dimensions (Concern, Control, Curiosity, Confidence) of the inventory of career adaptability capacities – international version 2.0 (Savickas & Porfeli, 2012). Analysis of the narratives was carried out across these qualitative indicators organised by the LAQuA coding system, divided into five qualitative analysis change categories at different levels of reflexivity (Increased Reflexivity, Revised Reflexivity, Open Reflexivity, Improved Reflexivity and No change) (Di Fabio, 2015).

In detail, the Increased Reflexivity category appears when the narrative produced before the intervention has one or several descriptors and in the narrative produced after the intervention has several identical descriptors that show a more in-depth reflexivity (in the presentation of the descriptor). The Revised Reflexivity category appears when the narrative produced before the intervention has one or several descriptors, and in the narrative produced after the intervention the previous descriptor or descriptors disappear and new different descriptors appear. The Open Reflexivity category appears when the narrative produced before the intervention has one or several descriptors and the narrative produced after the intervention has several identical descriptors (with the same level of reflexivity in the presentation of the newer/different descriptors). The Improved Reflexivity category appears when the narrative produced before the intervention has one or several descriptors and the narrative produced after the intervention has several identical descriptors that go more in depth, with new/different descriptors. The No Change category appears when the narrative produced before the intervention has one or several descriptors and the narrative produced after the intervention has several identical descriptors (with the same level of reflexivity in the presentation of the descriptor).

Procedure

ONISEP (France) chose to evaluate the game 'Imagine the future' ('L'avenir s' imagine !') (<https://www.lavenirsimagine.com/>). This game is centred around career guidance information and gender equality. It is designed to be used either in a group setting or individually.

Evaluation of the effectiveness of the game consisted of both a pilot group and a control group, using qualitative and quantitative evaluation tools at T1 (before testing the game) and T2 (after using the game).

More specifically, the evaluation plan is articulated as follows :

A) A pilot group (students who actively test the game, 23 students in this case) ; a control group (students who continue normal activities who do not test the game; 16 students in this case).

a) Application of a quantitative measure - the Life Project Reflexivity Scale (LPRS ; Di Fabio, Maree and Kenny, 2018) on the pilot group and control group, at two separate points in time (LPRS) : at T1 (before testing the game) and T2 (after using the game)

B) A sub sample of 15 students from the pilot group ; a sub sample of 15 students from the control group

b) Application of qualitative tools (Future Career Autobiography, FCA, Rehfuss, 2009, Italian version by Rehfuss & Di Fabio, 2012 ; Life Adaptability Qualitative Assessment, LAQuA, Di Fabio, 2015) of the pilot and control groups at T1 (before testing the game) and T2 (after using the game).

Data Analysis

Quantitative Data Analysis

ONISEP (France) had both a pilot and control group at T1 and T2 and therefore it was possible to compare results on the LPRS for the two groups at two different times. Given that the pilot group and control group consisted of less than 30 participants for each group, to analyse the results it is appropriate to carry out a comparison using non parametric statistics. In particular, a non parametric Mann-Whitney U test (equivalent of a one way ANOVA parametric analysis of variance when two groups are compared) was carried out to find any statistically significant differences in the average evaluation scores between the pilot group and the control group at T1. In addition, to evaluate the effect of the intervention, a Wilcoxon non parametric test (equivalent to an ANOVA repeated parametric measures with an intra-subject variable – time: T1 / T2) was distinctly carried out for the pilot group and the control group. A non parametric Mann-Whitney U test (equivalent to an ANOVA repeated parametric measures with a pilot group/control group independent variable between the subjects and a n intra-subject time variable : T1/T2) was also done. The threshold was set at $p \leq 0,05$.

Qualitative Data Analysis

For the pilot group and the control group, the initial and final responses of each participant on the FCA and the LAQuA were matched for narrative comparison purposes; this was carried out by two independent expert evaluators. An analysis of the reliability between the two assessments aided by the Kappa statistic was used to determine the coherence between the evaluators. An χ^2 test was also used to determine if the evident changes were significantly different. The threshold was set at $p \leq 0,05$.

Quantitative Analysis Results

ONISEP (France) Non parametric Mann-Whitney U Test

For T1, Mann-Whitney U test revealed no significant difference between the test group and the control group with regard to the three LPRS dimensions. The following results were captured : Authenticity ($U = 180,00$, $p = .921$), Acquiescence ($U = 238,00$, $p = .128$), Clarity/Projectuality ($U = 175,50$, $p = .810$) (table 5). This result was an important prerequisite to carry out a comparison between the test group and the control group.

Table 5 - ONISEP (France) non parametric Mann-Whitney U test

	Pilot group (n= 23)	Control group (n= 16)	<i>U</i>	<i>p</i>
	<i>M</i>	<i>M</i>		
Authenticity LPRS	19.91	19.63	180.00	.921
LPRS Acquiescence	11.17	11.50	238.00	.128

Clarity/projectualityof the LPRS	18.35	17.13	175.50	.810
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ONISEP (France) Wilcoxon non parametric Test

For the Wilcoxon non parametric test, the results for the pilot group were the following : Authenticity ($W = 16,00$, $p < .001$), Acquiescence ($W = 26,76$, $p < .01$), Clarity/Projectuality ($W = 44,50$, $p < .05$) (Table 6). The results for the control group were the following : Authenticity ($W = 23,00$, $p = 0,365$), Acquiescence ($W = 25,00$, $p = .150$), Clarity/Projectuality ($W = 28,00$, $p = .220$) (table 7).

Table 6 - ONISEP (France) non parametric Wilcoxon test

	Pilot group ($n = 23$)		W	p
	T1 M	T2 M		
Authenticity LPRS	19.91	13.48	16.00	.001
LPRS Acquiescence	11.17	16.26	26.76	.006
Clarity/projectuality of the LPRS	18.35	14.00	44.50	.013

Tableau 7 - ONISEP (France) non parametric Wilcoxon test

	Control group ($n = 16$)		W	p
	T1 M	T2 M		
Authenticity LPRS	20.13	19.63	23.00	.365
LPRS Acquiescence	13.06	11.50	25.00	.151
Clarity/projectuality of the LPRS	18.25	17.13	28.00	.220

ONISEP (France) non parametric Mann-Whitney U Test

The non parametric Mann-Whitney U test showed significant statistical differences between the pre and post test results for the test group : authenticity ($U = 307,50$, $p < .001$), acquiescence ($U = 93,50$, $p < .01$), clarity/projectuality ($U = 175,50$, $p = .177$) (table 8).

Table 8 - Onisep (France) non parametric *Mann-Whitney U* test

	Pilot group (n = 23)		Control group (n= 16)		<i>U</i>	<i>p</i>
	T1 <i>M</i>	T2 <i>M</i>	T1 <i>M</i>	T2 <i>M</i>		
Authenticity LPRS	19.91	13.48	20.13	19.63	307.50	.001
LPRS Acquiescence	11.17	16.26	13.06	11.50	93.50	.009
Clarity/projectuality of the LPRS	18.35	14.00	18.25	17.13	175.50	.177

Qualitative Data Analysis Results

Future Career Autobiography (FCA)

The Future Career Autobiography analysis revealed the following : 11 participants (47,83 %) in the pilot group reported a change and 12 participants (52,17 %) reported no change, where as in the control group 2 participants (12,50 %) reported a change and 14 participants (87,50 %) reported no change. The χ^2 test showed that the differences between the pilot group and the control group were statistically significant ($\chi^2=5,30$, $p < .05$). The reliability of judgement was determined at Kappa = .86 ($p < .001$). It is possible to highlight an increase in themes of change in the pilot group in terms of more relection after the game, notably in the transition through the general fields to the more specific of this young target group(14-15 year olds).

Below are some examples of qualitative feedback following the themes of degrees of professional change identified during the FCA analysis of the pilot group. For example “In five years, I can see myself in sixth form studying a technical qualification (Brevet de technicien supérieur)” and “In five years, I can see myself in sixth form studying for a BTS. I decided to do it to be sure of what I’d like to do, thanks to the work experience aspect I can be sure of the job that I want to do and gain an additional diploma” 1) General Fields and Desires to Specification and Exploration theme; which describes a progression from general interests and desires to more specific themes = i.e. in an initial FCA “Continue studying” and in a further FCA “I will go to university”.

Life Adaptability Qualitative Assessment (LAQuA)

The LAQuA analysis revealed the following results :

Regarding Concern, in the pilot group 14 participants (60,87 %) showed changes and 9 participants (39,13 %) did not report any changes where as in the control group 3 participants (18,75 %) reported changes and the 13 other participants (81,25 %) reported no change. The χ^2 test revealed that the differences between the pilot group and the control group were statistically significant ($\chi^2=6,81, p < .01$). The reliability between judgements was determined at Kappa = .83 ($p < .001$).

Regarding Control, in the pilot group 11 participants (47,83 %) showed changes and 12 participants (52,17 %) did not report any changes where as in the control group 5 participants (31,25 %) showed changes and and 11 participants (68,75 %) did not report any changes. The χ^2 test revealed that the differences between the pilot group and the control group were not statistically significant ($\chi^2=1,07, p = .301$). The reliability between judgements was determined at Kappa = .82 ($p < .001$).

Regarding Curiosity, in the pilot group 11 participants (47,83 %) showed changes and 12 participants (52,17 %) did not report any changes where as in the control group 7 participants (43,75 %) showed changes and 9 participants (56,25 %) did not show any changes. The χ^2 test revealed that the differences between the pilot group and the control group were not statistically significant ($\chi^2=.06, p = .802$). The reliability between judgements was determined at Kappa = .84 ($p < .001$).

Regarding Confidence, in the pilot group 14 participants (60,87 %) showed changes and 9 participants (39,13 %) did not report any changes, where as in the control group 4 participants (25,00 %) showed changes and 12 participants (75,00 %) showed no change. The χ^2 test revealed that the differences between the pilot group and the control group were statistically significant ($\chi^2=4,89, p < .05$). The reliability between judgements was determined at Kappa = .83 ($p < .001$).

Below are some examples of changes recorded during the qualitative analysis (for the four dimensions of career adaptability – concern, control, curiosity, confidence) in the pilot group.

Concern. In the narrative before using the game (T1): 1a) “to meet people who can give me advice on work that I could do later.” 1b) “No” 1c) “I dont think about my future life.” (Qualitative descriptor: Involvement). In the narrative after using the game: 1a) “I feel organised for my future.” 1b) “Itis very complicated for me to see.” 1c) “Right now no.For later on, I don’t know” (newdescriptor : Strategic). Revised reflexivity : In the narratives produced after using the game, we can see that the previous descriptor from the pre-intervention narratives has disappeared and a new different desriptor has appeared.

Control. In the narrative before using the game (T1): 2a) “This means looking for training for my future job, asking people who know about it” 2b) “Yes, I take responsibility for my future” 2c) “Because I’m interested in becoming a footballer” (No descriptor). In the narrative after using the game :2a) “To be responsible for the upcoming years. To know more about the future.” 2b) “Yes, I think that I take responsibility for my future”2c) “Because it’s important.” (New descriptor : Consciousness–Taking responsibility for my actions). Type II : In the

narratives produced before using the game, there is a lack of descriptors whereas in the narratives produced after the intervention, a descriptor appears.

Curiosity. In the narrative before using the serious game (T1): 3a) “For me, this means earning what happens and seeing if everything will happen the way in which it was planned in the past” 3b) “Yes.” 3c) “Because I’m looking forward to seeing if everything will happen the way in which I’ve imagined it to” (Qualitative descriptor: Inquiry). In the narrative after using the game: 3a) “To know if everything will happen like they imagined” 3b) “Yes.” 3c). “Because I’m looking forward to knowing if the future business that i dream of will be what my heart desires, if I succeed in facing all the tests, because i know that tests are waiting for me, and if i will ever achieve my objective” (a new descriptor but a more in-depth reflexivity: Investigation). Increased reflexivity. Type I : In the narratives produced after using the game, we have one or two identical descriptors but they are presented with a more in-depth reflexivity.

Confidence. In the narrative before using the serious game (T1): 4a) “Doing everything to achieve my goal but having something else to fall back on” 4b) “Yes.” 4c) “I plan.” (Qualitative descriptor: Innovate). In the narrative after using the game: 4a) “I am confident and I am going to find a way” 4b) “Yes” 4c) “I will get informed.” (new descriptor : Capable of working on responses). Revised reflexivity: In the narratives produced after using the game, we can see that the previous descriptor from the pre-intervention narratives has disappeared and a new different descriptor has appeared.

DISCUSSION OF THE RESULTS

Discussion of the Quantitative Results

Life Project Reflexivity Scale (LPRS)

Regarding the quantitative results, it is particularly interesting to highlight that the L'avenir s'imaginer game fosters an increase in the LPRS acquiescence dimension in the pilot group compared to the control group. It is a particularly promising result because this dimension of passively accepting suggestions for the future is not easy to improve during a single intervention. It is equally possible to remark, in comparison to the control group the pilot group shows a decrease in the authenticity dimension of the LPRS which seems counter intuitive. This could be explained by the fact that in a first instance games based learning pushes the student to reflect on the true values driving a sort of interior crisis which makes them perceive less authenticity.

Discussion of the Qualitative Results

Future Career Autobiography (FCA)

The use of L'avenir s'imaginer showed a significant increase in the FCA themes of change in the pilot group compared to the control group, notably in the theme of general interests to more specification in this young target group (14-15 years).

Life Adaptability Qualitative Assessment (LAQuA)

The results obtained by the LAQuA highlighted that the pilot group showed a change in narrative concerning two of the four areas of career adaptability (concern and confidence) at T2 after using the game, whereas the control group did not show changes in any of the four areas. In particular, the pilot group showed important changes regarding the Concern and Confidence dimensions of career adaptability (Savickas, 2001 ; Savickas and Porfeli, 2012). The game appears to impact on specific aspects, notably in Concern and Confidence. Concern refers to the tendency to be directed in one's own future, including the tendency to analyse one's own specific situation with an objective view – taking into account past experience and the current situation, looking ahead to possible future progressions. Confidence refers to the confidence in being able to build one's own future in line with one's own plans, even when faced with adversity.

In light of these qualitative results obtained thanks to LAQuA, it is possible to conclude that the game can support in building a future career and life plan.

FASE (Spain)

Method

Participants

The target group for FASE (Spain) was NEETS (18-24 years). At T1, the pilot group consisted of 20 participants and the control group consisted of 10 participants. At T2, there was only the pilot group with 20 participants.

Quantitative Evaluation

Life Project Reflexivity Scale (LPRS ; Di Fabio, Maree and Kenny, 2018). The LPRS is made up of 15 items on a Likert scale of 5 points (from 1 = Strongly Disagree to 5 = Strongly Agree). The scale gives scores in three distinct dimensions : *Authenticity* (for example, my future life plans are driven by my values) ; *Acquiescence* (for example, my career plans are driven by the values of the society in which I live, rather than by my own values) ; *Clarity/Projectuality* (for example, my future life plans are clearly defined). The Cronbach coefficient alpha are: .86 for the Authenticity dimension; .83 for the Acquiescence dimension; and .89 for the Clarity/Projectuality dimension. Simultaneous validation was established in terms corresponding to the Meaningful Life Measure (MLM, Morgan & Farsides, 2009) (.56 Authenticity dimension; .06 Acquiescence dimension; .53 Clarity/projectuality dimension) and with the Authenticity Scale (Wood, Linley, Maltby, Baliousis, & Joseph, 2008) (.39 authenticity dimension; .05 Acquiescence dimension; .29 Clarity dimension).

Qualitative Evaluation

Future Career Autobiography (FCA, Reh fuss, 2009). The FCA allows an in depth discovery of personal and professional motives, values and direction before and after the career intervention. The FCA includes the following questions : where do you hope to be in life and where do you see yourself professionally in 5 years time? (Reh fuss, 2009).

The comparison of initial and subsequent FCAs can be done by considering the following eight degrees of change identified by Reh fuss (2009): 1) General Fields and Desires to Specification and Exploration theme; 2) General Interests to More Specification theme; 3) Nondescript "Job" to Specification theme; 4) Disregard to Direction theme; 5) Vagueness to Focus theme; 6) Hindered to Hopeful theme; 7) Fixation to Openness theme; 8) Stagnation theme.

Life Adaptability Qualitative Assessment (LAQuA, Di Fabio, 2015). The LAQuA evaluates adaptability (Savickas, 2001, 2005), by detecting a change or lack of change in individual narratives before and after an intervention. The LAQuA is composed of 12 questions, with three questions per category (Concern, Control, Curiosity, Confidence) of the inventory of career adaptability capacities – international version 2.0 (Savickas & Porfeli, 2012). The responses to the 12 questions are compared before and after the intervention against 24 qualitative indicators: six for each of the four dimensions (Concern, Control, Curiosity, Confidence) of the inventory of career adaptability capacities – international version 2.0 (Savickas & Porfeli, 2012). Analysis of the narratives was carried out across these qualitative indicators organised by the LAQuA coding system, divided into five qualitative analysis

change categories at different levels of reflexivity (Increased Reflexivity, Revised Reflexivity, Open Reflexivity, Improved Reflexivity and No change) (Di Fabio, 2015).

In detail, the Increased Reflexivity category appears when the narrative produced before the intervention has one or several descriptors and in the narrative produced after the intervention has several identical descriptors that show a more in-depth reflexivity (in the presentation of the descriptor). The Revised Reflexivity category appears when the narrative produced before the intervention has one or several descriptors, and in the narrative produced after the intervention the previous descriptor or descriptors disappear and new different descriptors appear. The Open Reflexivity category appears when the narrative produced before the intervention has one or several descriptors and the narrative produced after the intervention has several identical descriptors (with the same level of reflexivity in the presentation of the newer/different descriptors). The Improved Reflexivity category appears when the narrative produced before the intervention has one or several descriptors and the narrative produced after the intervention has several identical descriptors that go more in depth, with new/different descriptors. The No Change category appears when the narrative produced before the intervention has one or several descriptors and the narrative produced after the intervention has several identical descriptors (with the same level of reflexivity in the presentation of the descriptor).

Procedure

FASE (Spain) chose Playhost, a vocational guidance game created in the framework of a previous European project (Playhost - www.fase.net/playhost). By selecting responses in multiple situations, the participants can explore the competences associated with 3 areas of gastronomy: Hotel, Cafe/snack-bar and Restaurant therefore deciding if they want to train or find work in the sector.

FASE used qualitative and quantitative tools at T1 (before using the game) with the pilot group and the control group; and qualitative and quantitative tools at T2 (after using the game) with only the pilot group due to difficulties associated with the target group of NEETS.

More specifically, the evaluation plan is articulated as follows:

A) A pilot group (NEETs who actively test the game; 20 NEETs in this case) ; a control group (NEETs who continue normal activities who do not test the game; 10 NEETs in this case).

a) Application of a quantitative measure - the Life Project Reflexivity Scale (LPRS ; Di Fabio, Maree and Kenny, 2018) on the pilot group and control group, at T1 (before testing the game) and only the pilot group at T2 (after using the game)

B) A pilot group (NEETs who actively test the game; 20 NEETs in this case) ; a control group (NEETs who continue normal activities who do not test the game; 10 NEETs in this case).

b) Application of a qualitative measure (*Future Career Autobiography*, FCA, Rehfuss, 2009; *Life Adaptability Qualitative Assessment*, LAQuA, DiFabio, 2015) on the pilot group and control group at T1 (before testing the game) and only the pilot group at T2 (after using the game)

Data Analysis

Quantitative Data Analysis

FASE (Spain) chose to work with a particularly hard to reach NEET target group, and so the pilot group and control group consisted of less than 30 participants for each group. For this number of participants it is appropriate to carry out a comparison using non parametric statistics. In particular, a non parametric Mann-Whitney U test (equivalent of an ANOVA one way parametric analysis of variance when two groups are compared) was carried out to find any statistically significant differences in the average evaluation scores between the pilot group and the control group at T1. In addition, to evaluate the effect of the intervention, a Wilcoxon non parametric test (equivalent to an ANOVA repeated parametric measures with an intra-subject variable- time: T1 / T2) was distinctly carried out for the pilot group and the control group. A non parametric Mann-Whitney U test (equivalent to an ANOVA repeated parametric measures with a pilot group/control group independent variable between the subjects and a n intra-subject time variable : T1/T2) was also done. The threshold was set at $p \leq 0,05$.

Qualitative Data Analysis

For the pilot group and the control group, the initial and final responses of each participant on the FCA and the LAQuA were matched for narrative comparison purposes; this was carried out by two independent expert evaluators. An analysis of the reliability between the two assessments aided by the Kappa statistic was used to determine the coherence between the evaluators. An χ^2 test was also used to determine if the evident changes were significantly different. The threshold was set at $p \leq 0,05$.

Quantitative Analysis Results

FASE (Spain) non parametric Mann-Whitney U pre-test

At T1, the non parametric Mann-Whitney U test revealed no significant difference between the pilot group and the control group regarding the three dimensions of the LPRS. The following results were obtained : Authenticity ($U = 126,00$, $p = .267$), Acquiescence ($U = 97,00$, $p = .914$), Clarity/Projectuality ($U = 122,00$, $p = .350$) (table 9). This result is an important prerequisite to carry out the comparison between the pilot group and the control group.

Table 9 - FASE (Spain) non parametric Mann-Whitney U Test

	Pilot Group ($n = 20$)	Control Group ($n = 10$)	U	p
	M	M		
Authenticity LPRS	21.25	22.40	126.00	.267

LPRS Acquiescence	17.60	17.70	97.00	.914
Clarity/projectualityof the LPRS	19.90	21.30	122.00	.350

FASE (Spain) non parametric Wilcoxon Test

The non parametric Wilcoxon test for the pilot group gave the following results: authenticity ($W= 77,00$, $p = .120$), acquiescence ($W= 22,00$, $p = .099$), clarity/projectuality ($W= 58,50$, $p = .361$) (table 10).

Table 10 - FASE (Spain) Wilcoxon non parametric test

	Pilot group ($n= 20$)		W	p
	T1 M	T2 M		
Authenticity LPRS	21.25	22.10	77.00	.120
LPRS Acquiescence	17.60	16.25	22.00	.099
Clarity/projectuality of the LPRS	19.90	20.35	58.50	.361

Qualitative Analysis Results

Future Career Autobiography (FCA)

In the pilot group the Future Career Autobiography analysis revealed the following : 17 participants (85 %) reported a change and 3 participants (15 %) reported no change,

The results showed an increase in the themes of change in the pilot group after having played the game. Even if this evidence is only descriptive, since the control group was not present at T2 for a statistical comparison, the results seem particularly promising - especially in a target group as complex as NEETs.

Below are some examples of qualitative feedback following the themes of degrees of professional change identified during the FCA analysis of the pilot group. For example in a first FCA "In five years, I can see myself in sixth form studying a technical qualification (Brevet de technicien supérieur)" and "In five years, I can see myself in sixth form studying for a BTS. I decided to do it to be sure of what I'd like to do, given the work experience aspect I can be sure of the job that I want to do and can gain an additional diploma" = i.e. in an initial FCA "Continue studying" and in a further FCA "I will go to university".

"I have a job linked to cooking" and in a following FCA "to have my own pâtisserie"1) General Fields and Desires to Specification and Exploration theme; which describes a progression from general interests and desires to more specific themes. In a first FCA "I dream of being a businesswoman" and in the following FCA "I hope that I can establish my ice cream and chocolate franchise, which financially would allow me to have a stable income because I think that its a very important part of having a nice easy personal life"3) Nondescript "Job" to Specification theme where the participants initial FCA starts with general themes and then focuses on personal and professional themes.

Life Adaptability Qualitative Assessment (LAQuA)

The analysis of LAQuA revealed the following results regarding the pilot group (in this case there was no control group) allowing a descriptive analysis of the changes in the pilot group.

Regarding Concern, 15 participants (75,00 %) showed changes and 5 participants (25,00 %) did not show any change. The reliability between judgements was determined at Kappa = .82 ($p < .001$).

Regarding Control, 12 participants (60,00 %) showed changes and 8 participants (40,00 %) did not show any change. The reliability between judgements was determined at Kappa = .83 ($p < .001$).

Regarding Curiosity, 13 participants (65,00 %) showed changes and 7 participants (35,00 %) did not show any change. The reliability between judgements was determined at Kappa = .83 ($p < .001$).

Regarding Confidence, 14 participants (70,00 %) showed changes and 6 participants (30,00 %) did not show any change. The reliability between judgements was determined at Kappa = .84 ($p < .001$).

Below are some examples of changes recorded during the qualitative analysis (for the four dimensions of career adaptability – concern, control, curiosity, confidence) in the pilot group.

Concern. In the narrative before using the game (T1): 1a) “Try to forget that I don’t have a job now and think that I will perhaps work in the future” 1b) “Not so much” 1c) “I think about never having had a job alot and I fear that I’ll never have one in the future.” (No descriptor). In the narrative after using the game: 1a) “I hope that the future will be different, better.” 1b) “No” 1c) “Because I didnt have much hope before, but now after the tests and the game I see that I do have some capacities and perhaps I could have a good job” (qualitative descriptor : to equip). Increased reflexivity. Type II : In the narratives produced before using the game, there is a lack of descriptor whereas in the narratives after the intervention a descriptor has appeared.

Control. In the narrative before using the game (T1): 2a) “Try what I can” 2b) “Yes.” 2c) “I did a training course but I still don’t have a job” (No descriptor). In the narrative after using the game :2a) “Preparing to have a good job” 2b) “Not yet” 2c) “Because I came here it’s already a start but I must study further.” (Qualitative descriptor: Responsible) Increased reflexivity. Type II : In the narratives produced before using the game, there is a lack of descriptors whereas in the narratives produced after the intervention, a descriptor appears.

Curiosity. In the narrative before using the game (T1): 3a) “To want to know whats going to happen in the future.” 3b) “No” 3c) “Because I think about the past and the present, and that because I don’t have a job now I’m afraid of what will happen in the future” (No descriptor). In the narrative after using the game: 3a) “To hope that it’ll be better.” 3b) “A bit.” 3c) “I want to hope that my future will be better” (Qualitative descriptor: Development). Type II: In the narratives produced before using the game, there is a lack of descriptors whereas in the narratives produced after the intervention, a descriptor appears.

Confidence. In the narrative before using the game (T1): 4a) “Believing that I can have a good job if I receive the right training” 4b) “No” 4c) “Because I’ve tried to have a good, well paid job but I haven’t found it yet” (No descriptor). In the narrative after using the game: 4a) “Thanks to the game I saw some capacities that I could develop and I could get a well paid job” 4b) “Now a bit more” 4c) “I believe that I’m going to do better and study more to have a well paid job.” (Qualitative descriptor : Innovate). Increased reflexivity: Type II In the narratives produced before using the game, there is a lack of descriptors whereas in the narratives produced after the intervention, a descriptor appears.

Discussion of Results

Discussion of Quantitative Results

Life Project Reflexivity Scale (LPRS)

Regarding the quantitative results in the pilot group, the game showed a clear tendency to increasing the Authenticity and Clarity dimensions. These results are promising- in future studies with the control group and a greater number of participants the effectiveness of the game could be verified with a quantitative perspective, most likely confirming this tendency.

Discussion of Qualitative Results

Future Career Autobiography (FCA)

Use of the game showed a descriptive increase in the FCA themes of change in the pilot group, however in the absence of a control group it is not possible to carry out a statistical comparison. Nevertheless, the results are particularly promising for this complex target group of NEETS and so in future studies with a control group it could be interesting to check the effectiveness of the game according to the FCA qualitative change.

Life Adaptability Qualitative Assessment (LAQuA)

Use of the game equally showed a descriptive tendency to changes in the pilot group, detected using the four LAQuA dimensions of career adaptability (Savickas, 2001; Savickas & Porfeli, 2012). In particular, the descriptive changes are associated with the 'Concern' dimension - this is important for the NEET target group who are generally not involved in their own future. These results are promising (even if they were obtained from a small number of participants) and therefore in future studies with a control group it could be interesting to check the effectiveness of the game according to the LAQuA qualitative change.

ASPIRE-IGEN (United Kingdom)

Method

Participants

The target of Aspire-igen (United Kingdom) was NEETS (16-18 years). At T1 the pilot group consisted of 11 participants and the control group consisted of 9 participants. At T2 there was a pilot group of 9 participants.

Quantitative Evaluation

Life Project Reflexivity Scale (LPRS ; Di Fabio, Maree and Kenny, 2018). The LPRS is made up of 15 items on a Likert scale of 5 points (from 1 = Strongly Disagree to 5 = Strongly Agree). The scale gives scores in three distinct dimensions : *Authenticity* (for example, my future life plans are driven by my values) ; *Acquiescence* (for example, my career plans are driven by the values of the society in which I live, rather than by my own values) ; *Clarity/Projectuality* (for example, my future life plans are clearly defined). The Cronbach coefficient alpha are: .86 for the Authenticity dimension; .83 for the Acquiescence dimension; and .89 for the Clarity/Projectuality dimension. Simultaneous validation was established in terms corresponding to the Meaningful Life Measure (MLM, Morgan & Farsides, 2009) (.56 Authenticity dimension; .06 Acquiescence dimension; .53 Clarity/projectuality dimension) and with the Authenticity Scale (Wood, Linley, Maltby, Baliousis, & Joseph, 2008) (.39 authenticity dimension; .05 Acquiescence dimension; .29 Clarity dimension).

Qualitative Evaluation

Future Career Autobiography (FCA, Rehfuss, 2009). The FCA allows an in depth discovery of personal and professional motives, values and direction before and after the career intervention. The FCA includes the following questions : where do you hope to be in life and where do you see yourself professionally in 5 years time? (Rehfuss, 2009).

The comparison of initial and subsequent FCAs can be done by considering the following eight degrees of change identified by Rehfuss (2009): 1) General Fields and Desires to Specification and Exploration theme; 2) General Interests to More Specification theme; 3) Nondescript "Job" to Specification theme; 4) Disregard to Direction theme; 5) Vagueness to Focus theme; 6) Hindered to Hopeful theme; 7) Fixation to Openness theme; 8) Stagnation theme.

Life Adaptability Qualitative Assessment (LAQuA, Di Fabio, 2015). The LAQuA evaluates adaptability (Savickas, 2001, 2005), by detecting a change or lack of change in individual narratives before and after an intervention. The LAQuA is composed of 12 questions, with three questions per category (Concern, Control, Curiosity, Confidence) of the inventory of career adaptability capacities – international version 2.0 (Savickas & Porfeli, 2012). The responses to the 12 questions are compared before and after the intervention against 24 qualitative indicators: six for each of the four dimensions (Concern, Control, Curiosity, Confidence) of the inventory of career adaptability capacities – international version 2.0 (Savickas & Porfeli, 2012). Analysis of the narratives was carried out across these qualitative indicators organised by the LAQuA coding system, divided into five qualitative analysis change categories at different levels of reflexivity (Increased Reflexivity, Revised Reflexivity, Open Reflexivity, Improved Reflexivity and No change) (Di Fabio, 2015).

In detail, the Increased Reflexivity category appears when the narrative produced before the intervention has one or several descriptors and in the narrative produced after the intervention has several identical descriptors that show a more in-depth reflexivity (in the presentation of the descriptor). The Revised Reflexivity category appears when the narrative produced before the intervention has one or several descriptors, and in the narrative produced after the intervention the previous descriptor or descriptors disappear and new different descriptors appear. The Open Reflexivity category appears when the narrative produced before the intervention has one or several descriptors and the narrative produced after the intervention has several identical descriptors (with the same level of reflexivity in the presentation of the newer/different descriptors). The Improved Reflexivity category appears when the narrative produced before the intervention has one or several descriptors and the narrative produced after the intervention has several identical descriptors that go more in depth, with new/different descriptors. The No Change category appears when the narrative produced before the intervention has one or several descriptors and the narrative produced after the intervention has several identical descriptors (with the same level of reflexivity in the presentation of the descriptor).

Procedure

Aspire-igen (United Kingdom) chose Job Interview Game (www.careerswales.com/en/jobs-and-training/job-seeking/sell-yourself-well/interviews/), a role play which aims to help young people (16-19 years) in vocational or secondary education prepare for an interview.

Aspire-igen administered quantitative and qualitative evaluation tools at T1 (before using the game) to the pilot group and control group; as well as quantitative and qualitative evaluation tools at T2 (after using the game) with only the pilot group due to difficulties associated with engaging the target group (NEETs).

More specifically, the evaluation plan is articulated as follows:

A) A pilot group (NEETs who actively tested the game; in this case 11 NEETs); a control group (NEETs who continued normal activities who did not test the game; in this case 9 NEETs).

a) Application of a quantitative measure - the Life Project Reflexivity Scale (LPRS ; Di Fabio, Maree and Kenny, 2018) on the pilot group and control group, at two separate points in time (LPRS) : at T1 (before testing the game) and only the pilot group at T2 (after using the game)

B) A pilot group (NEETs who actively tested the game; in this case 20 NEETs); a control group (NEETs who continued normal activities who did not test the game; in this case 9 NEETs).

b) Application of qualitative tools (*Future Career Autobiography*, FCA, Rehfuss, 2009, Italian version by Rehfuss & Di Fabio, 2012 ; *Life Adaptability Qualitative Assessment*, LAQuA, Di Fabio, 2015) on the pilot and control groups at T1 (before testing the game) and T2 (after using the game).

Data Analysis

Quantitative Data Analysis

Aspire-igen (United Kingdom) chose to work with a particularly difficult to engage target group of NEETs, and so the pilot group and control group were comprised of less than 30 participants for each group. For this number of participants it is appropriate to carry out a comparison using non parametric statistics. In particular, a non parametric Mann-Whitney U test (equivalent of an ANOVA one way parametric analysis of variance when two groups are compared) was carried out to find any statistically significant differences in the average evaluation scores between the pilot group and the control group at T1. In addition, to evaluate the effect of the intervention, a Wilcoxon non parametric test (equivalent to an ANOVA repeated parametric measures with an intra-subject variable – time: T1 / T2) was distinctly carried out for the pilot group and the control group. A non parametric Mann-Whitney U test (equivalent to an ANOVA repeated parametric measures with a pilot group/control group independent variable between the subjects and a n intra-subject time variable : T1/T2) was also done. The threshold was set at $p \leq 0,05$.

Qualitative Data Analysis

For the pilot group and the control group, the initial and final responses of each participant on the FCA and the LAQuA were matched for narrative comparison purposes; this was carried out by two independent expert evaluators. An analysis of the reliability between the two assessments aided by the Kappa statistic was used to determine the coherence between the

evaluators. An χ^2 test was also used to determine if the evident changes were significantly different. The threshold was set at $p \leq 0,05$.

Quantitative Analysis Results

Aspire-igen (United Kingdom) non parametric Mann-Whitney *U* pre-test

At T1, the non parametric Mann-Whitney *U* test revealed statistically significant differences between the pilot groups and the control group in the following LPRS dimensions: Authenticity ($U = 86,00$, $p < .01$) and Acquiescence ($U = 77,50$, $p < .05$). On the contrary, the Clarity and the Projectuality of the LPRS ($U = 66,00$, $p = .230$) was not statistically significant (table 11). This result is an important prerequisite for carrying out the comparison between the pilot group and the control group.

Tableau 11 - Aspire-igen non parametric Mann-Whitney *U* test

	Pilot group ($n = 11$)	Control group ($n = 9$)	<i>U</i>	<i>p</i>
	<i>M</i>	<i>M</i>		
Authenticity LPRS	17.64	20.00	86.00	.004
LPRS Acquiescence	14.82	19.44	77.50	.031
Clarity/projectuality of the LPRS	18.09	19.78	66.00	.230

Aspire-igen (United Kingdom) non parametric Wilcoxon test

The non parametric Wilcoxon test for the pilot group only gave the following results: authenticity ($W = 77,00$, $p = .120$), acquiescence ($W = 22,00$, $p = .099$), clarity/projectuality ($W = 58,50$, $p = .361$) (table 12).

Table 12 -Aspire-igen (Royaume-Uni) non parametric Wilcoxon test

	Pilot group ($n = 9$)		<i>W</i>	<i>p</i>
	T1 <i>M</i>	T2 <i>M</i>		
Authenticity LPRS	17.56	18.33	24.00	.396
LPRS Acquiescence	13.89	13.78	11.00	.609
Clarity/projectuality of the LPRS	17.89	17.56	10.50	.999

Qualitative Analysis Results

Future Career Autobiographies (FCA)

In the pilot group the Future Career Autobiography analysis revealed the following: 3 participants (27,27 %) reported a change and 8 participants (72,73 %) reported no change. There is a tendency towards a descriptive change, which seems promising in a target group as complex as NEETs.

Below are some examples of qualitative feedback following the themes of degrees of professional change identified during the FCA analysis of the pilot group. For example in a first FCA "Working full time in an excellent job" and in the following FCA "Working full time in a well paid job" (1. General Fields and Desires to Specification and Exploration theme; which describes a progression from general interests and desires to more specific themes). In this case, the person specifically mentioned the importance of earning a good living.

Life Adaptability Qualitative Assessment (LAQuA)

The LAQuAs revealed the following results regarding the pilot group (in this case there was no control group) allowing a descriptive analysis of changes. Only 8 participants finished the LAQuA.

Regarding Concern, 4 participants (50,00 %) showed changes and 4 participants (50,00 %) showed no change. The reliability between judgements was determined at Kappa = .85 ($p < .001$).

Regarding Control, 3 participants (37,50 %) showed changes and 5 participants (62,50 %) showed no change. The reliability between judgements was determined at Kappa = .86 ($p < .001$).

Regarding Curiosity, 5 participants (62,50 %) showed changes and 3 participants (37,50 %) showed no change. The reliability between judgements was determined at Kappa = .87 ($p < .001$).

Regarding Confidence, 6 participants (75,00 %) showed changes and 2 participants (25,00 %) showed no change. The reliability between judgements was determined at Kappa = .86 ($p < .001$).

Below are some examples of changes recorded during the qualitative analysis (for the four dimensions of career adaptability – concern, control, curiosity, confidence) in the pilot group.

Concern. In the narrative before using the game (T1) : 1a) "For me to focus on my future, I have to be motivated" 1b) "Yes, I think I am going in the right direction for my future." 1c) "Because I can visualise my future self and where I will be in a few years." (Qualitative descriptor : Anticipation). In the narrative after using the game: 1a) "In order to focus on my future interests, I need to be self disciplined and able to see my future goals." 1b) "Yes" 1c) "Because I can imagine my future self and where I am going to be in a few years." (Identical descriptor but more in depth reflexivity : Anticipation). Increased reflexivity (I). Type I : in the narratives produced after the intervention, we have one or two identical descriptors that are presented with a more in depth reflexivity.

Control. In the narrative before using the game (T1): 2a) "You accept the future without question" 2b) "Yes." 2c) "Because now I'm training and I can imagine what I want to do, I act in steps and I try to do my best." (qualitative descriptor : Consciousness-taking responsibility for the action). In the narrative after using the game: 2a) "You accept that you create your own life instead of letting things happen to you" 2b) "Yes." 2c) "I can imagine what I want to do and how to get there and I'm doing my best to get the grades I need for my future job." (identical descriptor but more in depth descriptor : Consciousness-Taking charge of acts). Increased reflexivity (I). Type I : in the narratives produced after the intervention, we have one or two identical descriptors that are presented with a more in depth reflexivity

Curiosity. In the narrative before using the game (T1): "No response." 3b) "No response." 3c) "Quite simply not curious at the moment." (No descriptor). In the narrative after using the game: 3a) "Curiosity allows us to uncover new knowledge" 3b) "I hope so" 3c) "Just not curious at the moment" (new descriptor : Research). Increased reflexivity. Type II : in the narratives produced before the intervention, there is a lack of descriptor whereas in the narratives produced after the intervention, a descriptor appears.

Confidence. In the narrative before using the game (T1): 4a) "No response." 4b) "No response." 4c) "No response" (No descriptor). In the narrative after using the game: 4a) "Using my own mind and taking control" 4b) "No" 4c) "Not sure". Increased reflexivity. Type II: in the narratives produced before the intervention, there is a lack of descriptors whereas in the narratives produced after the intervention, a descriptor appears.

Discussion of Results

Discussion of Quantitative Results

Life Project Reflexivity Scale (LPRS)

The pilot group and the control group showed a statistically significant difference at T1. However, this result must be carefully considered because the size of the sample is very small. Regarding the quantitative results in the pilot group, although they are not statistically significant, the game showed a clear tendency towards increasing the authenticity dimension. This result is promising - in future studies with a control group and a greater number of participants, the effectiveness of this game could be verified from a quantitative perspective.

Discussion of Qualitative Results

Future Career Autobiography (FCA)

Use of the game showed a descriptive increase in the FCA themes of change in the pilot group, in line with the quantitative results. These results are promising for the complex target group of NEETS and so in future studies with a control group it could be interesting to check the effectiveness of the game according to qualitative FCA change.

Life Adaptability Qualitative Assessment (LAQuA)

Use of the game equally showed a descriptive tendency to increase the LAQuA changes in the four dimensions of career adaptability and, in particular, the curiosity and the confidence of the pilot group. These results are promising for the complex target group of NEETS and so in future studies with a control group and with a greater number of participants, it could be interesting to check the effectiveness of the game according to the qualitative change by the LAQuA.

AEVA (Portugal)

Method

Participants

The target of AEVA (Portugal) was comprised of students resitting Level 9 education (equivalent of Year 9 in the UK) who were looking for professional career guidance (age range 16-28 years). The pilot group consisted of 30 participants and the control group, 30 participants. The testing was carried out at T1.

Quantitative Evaluation

Life Project Reflexivity Scale (LPRS ; Di Fabio, Maree and Kenny, 2018). The LPRS is made up of 15 items on a Likert scale of 5 points (from 1 = Strongly Disagree to 5 = Strongly Agree). The scale gives scores in three distinct dimensions : *Authenticity* (for example, my future life plans are driven by my values) ; *Acquiescence* (for example, my career plans are driven by the values of the society in which I live, rather than by my own values) ; *Clarity/Projectuality* (for

example, my future life plans are clearly defined). The Cronbach coefficient alpha are: .86 for the Authenticity dimension; .83 for the Acquiescence dimension; and .89 for the Clarity/Projectuality dimension. Simultaneous validation was established in terms corresponding to the Meaningful Life Measure (MLM, Morgan & Farsides, 2009) (.56 Authenticity dimension; .06 Acquiescence dimension; .53 Clarity/projectuality dimension) and with the Authenticity Scale (Wood, Linley, Maltby, Baliousis, & Joseph, 2008) (.39 authenticity dimension; .05 Acquiescence dimension; .29 Clarity dimension).

Qualitative Evaluation

Future Career Autobiography (FCA, Rehfuss, 2009). The FCA allows an in depth discovery of personal and professional motives, values and direction before and after the career intervention. The FCA includes the following questions : where do you hope to be in life and where do you see yourself professionally in 5 years time? (Rehfuss, 2009).

The comparison of initial and subsequent FCAs can be done by considering the following eight degrees of change identified by Rehfuss (2009): 1) General Fields and Desires to Specification and Exploration theme; 2) General Interests to More Specification theme; 3) Nondescript "Job" to Specification theme; 4) Disregard to Direction theme; 5) Vagueness to Focus theme; 6) Hindered to Hopeful theme; 7) Fixation to Openness theme; 8) Stagnation theme.

Life Adaptability Qualitative Assessment (LAQuA, Di Fabio, 2015). The LAQuA evaluates adaptability (Savickas, 2001, 2005), by detecting a change or lack of change in individual narratives before and after an intervention. The LAQuA is composed of 12 questions, with three questions per category (Concern, Control, Curiosity, Confidence) of the inventory of career adaptability capacities – international version 2.0 (Savickas & Porfeli, 2012). The responses to the 12 questions are compared before and after the intervention against 24 qualitative indicators: six for each of the four dimensions (Concern, Control, Curiosity, Confidence) of the inventory of career adaptability capacities – international version 2.0 (Savickas & Porfeli, 2012). Analysis of the narratives was carried out across these qualitative indicators organised by the LAQuA coding system, divided into five qualitative analysis change categories at different levels of reflexivity (Increased Reflexivity, Revised Reflexivity, Open Reflexivity, Improved Reflexivity and No change) (Di Fabio, 2015).

In detail, the Increased Reflexivity category appears when the narrative produced before the intervention has one or several descriptors and in the narrative produced after the intervention has several identical descriptors that show a more in-depth reflexivity (in the presentation of the descriptor). The Revised Reflexivity category appears when the narrative produced before the intervention has one or several descriptors, and in the narrative produced after the intervention the previous descriptor or descriptors disappear and new different descriptors appear. The Open Reflexivity category appears when the narrative produced before the intervention has one or several descriptors and the narrative produced after the intervention has several identical descriptors (with the same level of reflexivity in the presentation of the newer/different descriptors). The Improved Reflexivity category appears when the narrative produced before the intervention has one or several descriptors and the narrative produced after the intervention has several identical descriptors that go more in depth, with new/different descriptors. The No Change category appears when the

narrative produced before the intervention has one or several descriptors and the narrative produced after the intervention has several identical descriptors (with the same level of reflexivity in the presentation of the descriptor).

Procedure

AEVA (Portugal) chose FUTURE Time Traveller (<http://future-time-traveller.eu/pt/future-time-traveller-3/>). This game combines professional career guidance around jobs of the future with game based learning in a 3D virtual world environment.

AEVA used qualitative and quantitative evaluation tools at T1 (before testing the game) to the pilot group and the control group. The testing was not carried out at T2 due to difficulties associated with the COVID-19 pandemic.

More specifically, the evaluation plan is articulated as follows :

A) A pilot group (students who actively test the game; 30 students in this case) ; a control group (students who continue normal activities who do not test the game; 30 students in this case).

a) Application of a quantitative measure - the Life Project Reflexivity Scale (LPRS ; Di Fabio, Maree and Kenny, 2018) on the pilot group and control group at T1 only, before testing the game.

B) A pilot group (students who actively test the game; 30 students in this case) ; a control group (students who continue normal activities who do not test the game; 30 students in this case).

b) Application of qualitative tools (*Future Career Autobiography*, FCA, Rehfuss, 2009, Italian version by Rehfuss & Di Fabio, 2012 ; *Life Adaptability Qualitative Assessment*, LAQuA, Di Fabio, 2015) of the pilot and control groups at T1 only (before testing the game)

Data Analysis

Quantitative Data Analysis

For AEVA (Portugal) who had both the pilot group and the control group only at T1 and 30 participants for each group, the parametric statistics have been carried out for any possible comparisons. In particular, a one-way ANOVA variance analysis was completed to see if there were any significant statistical differences between the average evaluation scores between the pilot group and the control group at T1. The threshold was set at $p \leq 0,05$.

Qualitative Data Analysis

Despite AEVA having made a big effort in gathering responses for both the FCA and LAQuA with 30 participants for the pilot group and the control group, due to the difficulties of the Covid-19 pandemic AEVA was unfortunately not able to collect data at T2 for either the pilot or control group. Having not had the possibility to compare the qualitative responses of the two groups between T1 and T2, a descriptive analysis of emerging categories at T1 was therefore carried out. For this reason, some examples of responses at T1 for the pilot group and the control group for FCA and LAQuA are presented. The threshold is set at $p \leq 0,05$.

Quantitative Analysis Results

AEVA (Portugal) ANOVA Pretest

At T1, the one way analysis of variation (ANOVA) did not reveal any significant difference between the pilot and control groups concerning the three dimensions of the LPRS. The following results were obtained: Authenticity ($F_{(1,58)}=2,36$, $p = .130$), Acquiescence ($F_{(1,58)} = .10$, $p = .757$), Clarity/Projectuality ($F_{(1,58)} = .954$, $p = .333$) (table 13). This result is an important prerequisite to carry out the comparison between the pilot group and the control group.

Table 13 - AEVA (Portugal) One way analysis of variation (ANOVA)

	Pilot group (N= 30)	Control group (N= 30)	$F_{(1,58)}$	P
	<i>M</i>	<i>M</i>		
Authenticity LPRS	21.40	22.03	2.36	.130
LPRS Acquiescence	8.33	8.23	.10	.757
Clarity/projectuality of the LPRS	22.03	21.63	.954	.333

Qualitative Analysis Results

Future Career Autobiography (FCA)

Although AEVA made a great effort to gather FCA responses for 30 participants, both for the pilot group and the control group, there was not the possibility to reach the same participants at T2 due to difficulties associated with the Covid-19 pandemic. For this reason, several example FCA responses for the pilot group and the control group are reported. It is possible to remark that similar responses were produced confirming the quantitative analysis results which did not show any statistical differences between the pilot group and the control group.

Examples for the pilot group at T1 :in a first personal FCA “I hope that I can go to another country where I can have a better life”, “I hope that I will have a home and a family”, “To have a house that is just mine, a car and a job”. Examples for the pilot group at a personal level at T1 :in a first personal FCA “I hope that I will have a good stable job, perhaps abroad”, “to have a job, a family and a house” “ To have a job and a car”.

Examples for the pilot group at professional level at T1 : in a first professional FCA “To work in a childrens park”, “To work in something that I like”, “I don’t know”. Examples for the control group at professional level at T1 : in a first professional FCA “Work in childcare”, “I hope to have a job doing what I love” “I don’t know”.

Life Adaptability Qualitative Assessment (LAQuA)

As previously indicated, AEVA successfully gathered LAQuA responses for 30 participants both for the pilot group and the control group, however due to Covid-19 was not able to carry out

this qualitative tool with participants at T2. For this reason, some example responses at T1 for the pilot group and the control group related to the LAQuA are reported. We can remark that similar responses were produced, confirming the results that the quantitative analysis tool did not show statistical differences between the pilot group and the control group.

For the pilot group, example responses for the four dimensions (Concern, Control, Curiosity, Confidence) of the LAQuA.

Regarding Concern at T1 :1a) "Having objectives and plans." 1b) "Yes." 1c) "Because I know what I want, I have support and means for the future."

Regarding Control at T1 : 2a) "Being myself, engaged, enlightened, decisive, etc." 2b) "Yes." 2c) "Because we should take responsibility for our actions, we have rights and responsibilities and we should take responsibility because no one will do it for us."

Regarding Curiosity at T1 : 3a) "To know more, look for new experiences." 3b) "Of course." 3c) "Because I consider myself a curious person who is open to new experiences."

Regarding Confidence at T1 : 4a) "Accepting who we are and standing up for ourselves" 4b) "Yes." 4c) "Because I am looking for more, I don't want to be complacent."

For the control group, example responses for the four dimensions (Concern, Control, Curiosity, Confidence) of the LAQuA.

Regarding Concern at T1:1a) "Knowing which way to go." 1b) "Yes" 1c) "Because I already know which way I want to go."

Regarding Control at T1:2a) "Being mature, responsible and engaged in my future." 2b) "Yes." 2c) "Because I try to act in a conscious way."

Regarding Curiosity at T1:3a) "This means having expectations for the future" 3b) "Yes." 3c) "To know if I'm on the right track."

Regarding Confidence at T1: 4 a) "Believing in oneself." 4b) "Yes" 4c) "Because I believe in myself."

Discussion of the Results

Discussion of Quantitative Results

Life Project Reflexivity Scale (LPRS)

The results of the one way variance analysis (ANOVA) showed there were no statistical differences at T1 between the pilot group and the control group according to the three dimensions (authenticity, acquiescence, clarity/projectuality) of the LPRS. This is a prerequisite condition for the following comparisons between the pilot group and the control group at T2.

Discussion of Qualitative Results

Future Career Autobiography (FCA)

The analysis of the *Future Career Autobiography* (FCA) results at T1 comparing the pilot group and the control group showed similar responses at a qualitative level in line with No Change, as identified in the quantitative analysis of the pilot group and the control group. At descriptive analysis level, the responses both in pilot group and the control group outlined a desire for stability, both in a personal and professional sense.

Life Adaptability Qualitative Assessment (LAQuA)

Analysis of the LAQuA at T1 comparing the pilot group and the control group according to this tool equally showed similar responses at a qualitative level in line with No Change, highlighted again by the quantitative analysis between the pilot group and the control group.