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Note of intent



PYXIS

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What is the issue Pyxis is solving?

Today's current issue regarding professional orientation is that it lacks objectivity, exhaustivity and accuracy. Despite this alarming concern, professional orientation is a major concern for students and their families. According to a poll conducted by *CSA/Appel/La Croix*, 97% of them believe it is of major importance.

BIOP and *Opinion* way conducted a major study in 2010 which revealed that French students receive misinformation regarding post-baccalaureate options for their studies. Only 20% say they have received accurate and sensible of their possibilities and 80% of high school graduates said they never had the help of a guidance counselor. Furthermore, 67% of French students affirm that they would make different choices if they had the possibility to go back in time. 21% are not sure to continue in the path that they have chosen, which amounts for one young adult in five right after the baccalaureate.

The current tools that are offered by the Education Nationale (French Ministry of Education) are suboptimal and strongly criticized. The post-baccalaureate procedure, although highly valued for its online platform is severely judged based on its functionalities: 60% of users find it complex and 56% even consider that it does not allow to make the right orientation choices.

Orientation differs according to social background, origin and gender. Only one out of 10 female graduates from the scientific section pursues an undergraduate degree in an engineering school where more than 70% of master graduates are men. Girls feel that they have more difficulties in their orientation than boys and are subjected to more stress (study by Serge Lacoste, Sylvie Esparbès-Pistre and Pierre Tap). Also, students and parents from disadvantaged backgrounds are the least informed (*CSA/Apel/La Croix*).

Poor professional orientation is a real issue for students, but also for the economics of higher education (saturation of degrees, repetition, change of studies) and for the job market. It is essential to give young people the means to enable them to make a lucid and enlightened choice regarding their studies and career path. This is why we decided to work on this issue.

In order to grasp young graduate's aspirations, we conducted a study which was administered to undergraduate and graduate students. We had obtained and thoroughly analyzed the 316 responses.

We firstly asked, "during your professional orientation, when you were in high school, do you think you had enough information?". More than half of the respondents considered that they did not.

We then asked the question "during your professional orientation, when you were in high school, do you think you received enough help from your teachers?". The result was even more notable as 61,8% of them considered that they did not, against only 29,1% who considered that they did and 9,1% who did not know.

In order to analyze where the real origin of the problem, question 3 asked: "during your professional orientation, when you were in high school, do you think you got enough help from your parents?".

The answer was very straight forward as 89,1% of the respondents answered Yes and only 3,6% answered No.

We then asked the respondents what type of information and from whom they wished to receive. A majority mentioned professionals, teachers, former students and academic institutions (especially less famous ones). To find orientation advices and information, a little over half of the respondents went to a guidance counselor and the astonishing majority of them used the internet or an online platform to help them in with their choice (85,5%)

Question 6 asked whether they thought professional orientation was biased and unfair or not. For 93% of respondents, orientation depended on the high school, the social background, the available information as well as geographical criteria's. Respondents also felt that some curriculum had a high value with regards to the society's opinion or were seen as more conventional. It has also been said that the personal desires of high school students were not sufficiently taken into account and undermined by a certain vision of the meaning of excellence. There is an undeniable peer pressure, especially from parents, in addition to the social pressure and existing bias in the available information.

In order to assess the feasibility of an online solution, we asked them on a scale from one to five: "If there had been an online tool that allowed you to have an easy and simple access to information, to refine your profile and to get a regular follow up on your orientation, would you have used it?". 43,6% of the respondents answered five against 34,5% for 4. Only 1,8% answered that they would not have used it.

Question 8 asked "if this tool had been an app on your phone which you could have used regularly, would you have used it?". 41,8% answered the maximum; 32,7% answered number 4 and only 1,8% answered that they would not have used it.

We concluded that the majority of students felt they did not have enough information and were not sufficiently monitored for their professional orientation, particularly by their high school. The majority of students would have liked more information, especially from professionals, from their professors, alumni and institutions in order to gather more realistic options. Most students seem to agree that today's orientation process is biased and unfair. The majority of them also turned to online tools for their professional orientation. Finally, the majority of students would have been interested by an online tool.

This survey served as a pillar for developing Pyxis, which we believe to be the best solution for fixing today's broken education system.

What is Pyxis?

Pyxis is a mobile app which we have envisioned in order to improve student's professional orientation, especially in high school. The aim is to offer a panel of options which fits the ambitions, the skills and the interests of students and avoids the non-objective factors which influence students' decisions, such as their social background, their origin or other social pressures, ... Pyxis, helped by an artificial

intelligence, will collect information on students, educational institutions, and professionals. Powered by this information, the AI should then provide constant monitoring and comprehensive help to high schoolers. More precisely, Pyxis will offer information sheets, videos, interviews on different career paths and institutions, but also questionnaires and tests whose goal will be to grasp students' skills and ambitions without any prejudice or bias. Students will use Pyxis regularly in order to establish their profiles, interests, strengths and adequate professional choices. To increase the attractiveness of the app and optimize students' engagement, we are considering the creation of pop up questions which would appear as notifications on students' mobile with a frequency chosen by students (every day, twice a week, ...)

Not only does Pyxis provide a solution to problems of information, of inadequacy and of inequalities of professional orientation but it is also self-enriching thanks to new information collected on students, establishments and career paths - and therefore is always evolving.

This solution is efficient, original and feasible. It is efficient because it gathers in one tool all the information available on professional orientation, provides a regular monitoring for students and offers them adequate answers based not only on their profile but also the reality of the academic and professional world. It is original because it is an app which aims at becoming part of students' everyday life. We aim at portraying professional orientation not as a stressful concern but as a dynamic, entertaining and continuous thought process. Finally, it is feasible because we know what we are talking about. A few years ago, we used to be those students, looking for a future. We are familiar with the issues of information and orientation that other students face today. Furthermore, we are a connected generation who learns and interacts online, hence the significance of creating a mobile app that we know how to develop in order to get students' attention.

The student path on this app will be as followed. First, the student registers and fills in his personal data, including: his city, his high school, his report cards (grades + appreciations / honors). Then, he is immediately redirected to the Settings tab, where he must accept the privacy policy. He can then go to the "Tests" tab to answer orientation questions (see Appendix 2). He can look at his progression on the application in the tab "Progression". Finally, he can share his suggestions on the application in the Contacts section or on the Chatbot

The initial app will have basic features that we intend to further develop over time. The core components of the student version of our app will consist of a set of tabs allowing them to fill in their personal data and answer quizzes and orientation tests, both supporting the algorithm. The app's evolution will rely on such inputs, as they will supply data for precision and overall improvement of the algorithm.

The first basic version of the app will first be tested on selected schools in different regions of France (both urban and rural schools). Only the personal settings, quizzes and progression tabs will be available at that time (no events will take place, as only a few schools will be involved in the program). According to students' and schools' reactivity and appreciation of the app, we will officially launch the app and make it accessible to every high-school in France.

Once the app is up and running, we will further develop its school/university version, which will enable those institutions to:

- partake in Pyxis' events and partnerships,
- have an overview of their students' progression and orientation tendencies,
- access premium features of the app.

The app will be a beneficial tool for schools and universities. For instance, after each promotion graduates, schools will have the opportunity to compare orientation choices of their students, gathering data that is otherwise so hard to obtain.

What are the expected positive impacts of Pyxis?

With this project, we expect both direct and indirect positive repercussions. First and foremost, this tool will ensure many direct gains for the students using our application. It will help them get a better academic orientation and reduce the stress linked to this operation. One of our aims is to give these students' academic options they would never had thought of before. To do so, we will focus on the individual's profile, his interests and needs, in order to put forward the choices that seem the most coherent for them. The fact that the process takes place on a long timeline, from the beginning of high school up to the moment to make a decision, will better the final results. Finally, Pyxis will directly limit the influence that third parties, such as parents, school faculty and other social pressures, may have on the decision. The student will have the last word.

As for long term benefits, Pyxis will help in reducing inequalities that subsist in academic and professional orientation due to students' gender, origin and social background. Furthermore, our system will limit errors made in orientation, leading to a decrease of the costs of a student repeating a school year for the State. Because our solution will have students discovering career and academic paths they have not considered before, this will lead to the decongesting of the most demanded and well-known school paths (economic, scientific or literary). In the long run our project will have students enter the job market faster and rapidly contributing in the country's economy.

What are the major risks and what can be done to reduce them?

The success of our tool resides in data collection and the proper handling of private information. Simply put, a dysfunctional management of these information can be fatal. Based on machine learning our solution will not be fully efficient from the start. A close collaboration with developers and AI specialists is thus necessary to aim for the optimal data handling process, from collection to display. Multiple test should also be conducted to assess the tool's sharpness at each stage of its life.

Moreover, our value proposition to offer exhaustivity in orientation thanks to repeated quizzes can bore some of the high schoolers and drive them away from the platform. Success thus lies in the tool's ability to differentiate its offer from traditional orientation providers (ex: teachers). A balance must be found between frequent quizzing and a playful dimension.

It will therefore be necessary to conduct studies by interviewing the concerned populations in order to have a better knowledge of their expectations and the way they would use the tool. It will also be about having a dynamic approach and knowing how to adapt the tool according to student feedback. The idea is to make it as playful, attractive, intuitive, simple and effective as possible. A regular evaluation (quarterly or yearly) in the form of a questionnaire for the users and a suggestion tab will be put in place.

What is Pyxis' deployment strategy?

For Pyxis to exist a few steps need to be followed. The first phase of this project will be to acquire as much data as possible. If we can establish a partnership with the ministry of education, this process

will not be too complicated; otherwise, we will have to ask high schools to give us access to the information about their students. This needs to take place even before the algorithm and application are created, in order to already offer a service as complete as possible that will only become more performant with the new information it is given.

During this process, it will be essential to also ask students what their main issues with academic orientation are, how they would use the tool and what main features they would like to see on our platform. This will help us gain a better understanding of the current situation and deal with the most urging issues once our application is launched. Concurrently, we will need to begin creating our algorithm and add the information we are already collecting. The application will first be tested by a sample of students in order to fix any glitches that may appear and make sure that it answers the problems mentioned before. The last step will be to launch our platform officially by making it available to all students and promoting our service in schools.

From start to end, this process should not take more than a year and half as many of the steps mentioned can be done simultaneously.

What will be our return on investment?

Our need for financing is still to be precisely numbered. Yet we have already produced estimations for some of the costs. AI development should in itself cost around 100 000€. Fixed cost such as office rent and wages should amount for 150 000 € a year. We hope to minimize rent costs by entering an incubator. Costs such as marketing and communication campaigns should not exceed 10 000€. We also have to take into account costs linked to data analysis, data storage and data protection. The sustainability of these spending will of course depend on the obtention of governmental grants and subsidies. From our in-house revenues from educational institutions' subscription to a premium offer will depend our cost flexibility. Such subscription in turn are dependant on the app adoption in schools.

Our main goal is not to generate a financial benefit but to be in long run self-sustainable with no or little reliance on government funding. To achieve such financial independence, we aim at developing a number of revenue streams. First of them, advertisement on the platform for orientation related events will be a source of revenue consistent with our mission. A premium option should also be launched for educational institution wanting greater visibility. As much as all institutions will be indiscriminately mentioned on our platform, creating a precise description for each one of them is out of our reach. Thus, we will charge private institution wanting a full description page. We still want to write these descriptions ourselves to maintain objectivity. The revenue will be used to create the said pages but more importantly will be a resource to also provide information about public institutions, that we do not intend to charge.

What is our organization?

Our team is composed of two computer developers in charge of creating the app, one marketing and communication director in charge of promoting the app, two specialists in academic and professional orientation, and three people in charge of the administrative side of the project (partnerships, financial issues, legal issues). This team brings together all the skills required to develop Pyxis: computer development, marketing, knowledge in academic and professional orientation, and passion for this project.

We will use a number of resources to develop our project. First of all, we will collect data in order to nurture our app, from different sources: academic institutions, professional careers, and students themselves. In terms of financial resources, we hope to develop a partnership with the Education Nationale which will help us with grants and with visibility. The option Premium will generate revenues and create an incentive for academic institutions to use the app. Finally, the app will feature advertisements linked to academic orientation (especially for orientation events).

This whole organization rests on a close relationship with partners and sponsors:

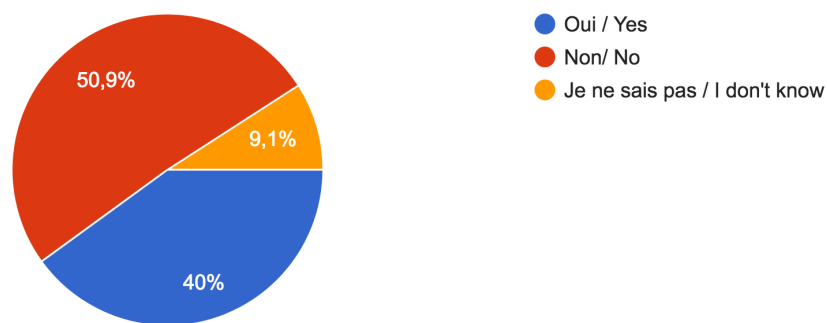
- The Education Nationale: in order to finance the project and to gather data in order to analyse academic paths and professional careers depending on geographical areas and students' social environment.
- High schools and academic institutions: in order to promote Pyxis, to organize meetings between students and professionals, to collect data and to subscribe to the Premium option.
- Professional federations: in order to represent the different career paths and to have a direct link to the professional world.
- Medias, especially social media and students' media: in order to promote Pyxis and to acquire a visibility and legitimacy.

Pyxis is an original and sustainable solution to a very important and pressing issue. We, as a team, want to provide a useful tool in order to make academic and professional orientation more accurate, more efficient and fairer. We are passionate about this project and know that we can have a positive impact in the confusing yet promising world we live in.

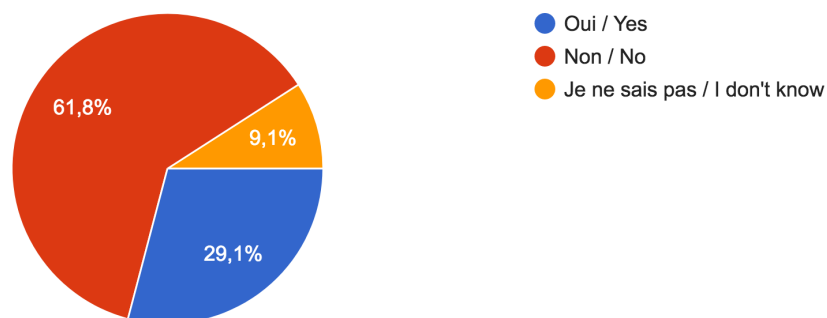
Appendices

Appendix 1: Results of our questionnaire

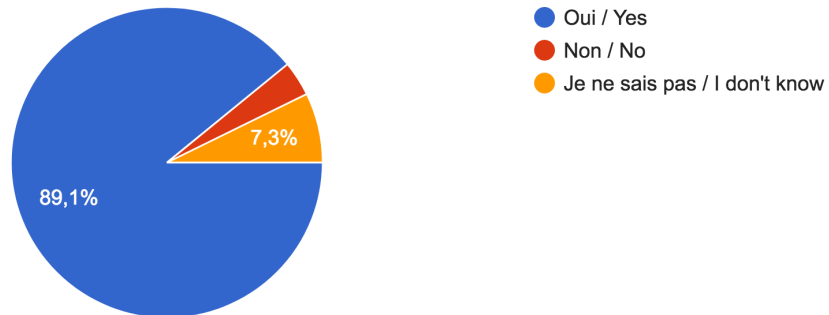
Question 1: During your professional orientation, when you were in high school, do you think you had enough information?



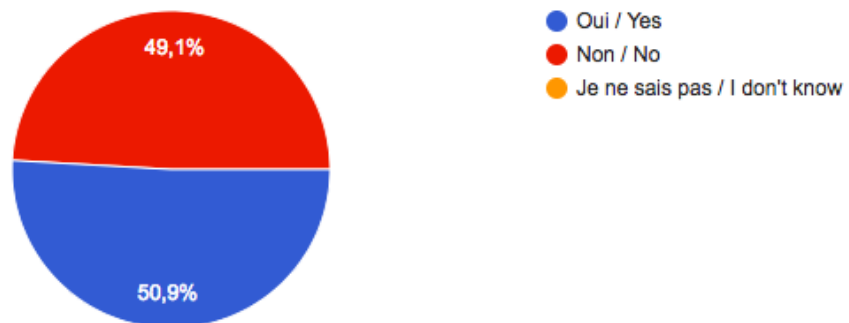
Question 2: During your professional orientation, when you were in high school, do you think you received enough help from your teachers?



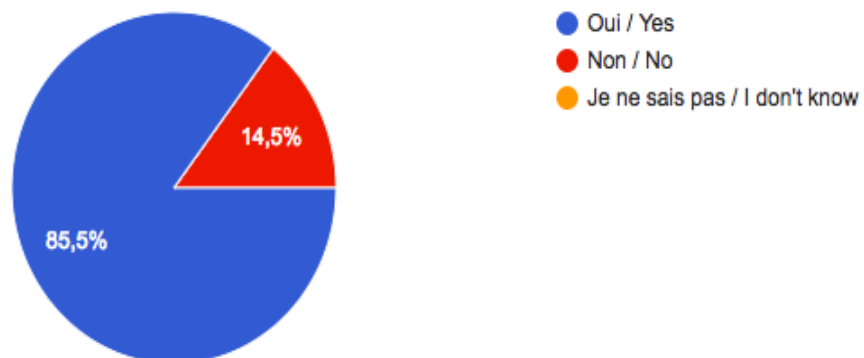
Question 3: During your professional orientation, when you were in high school, do you think you got enough help from your parents?



Question 4: Did you go to a guidance counsellor?



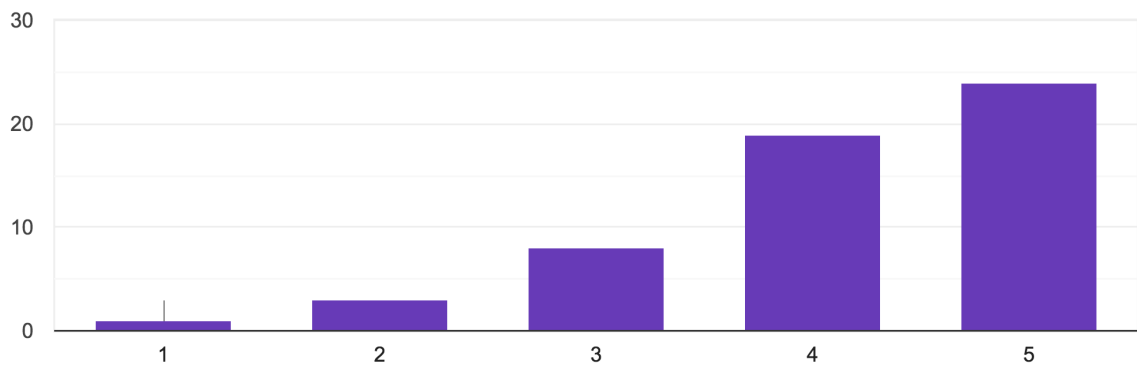
Question 5: Did you use the Internet or online platforms to help you in your professional orientation?



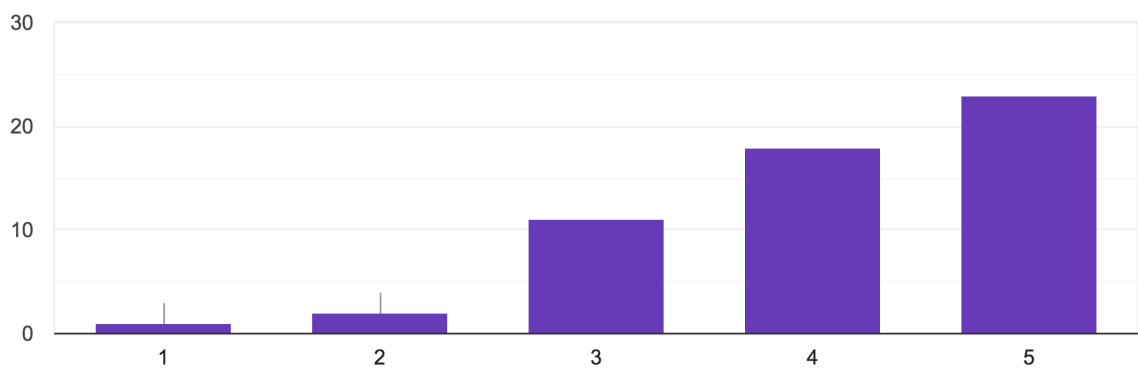
Question 6: Do you think the professional orientation is biased? Unfair? Why?

Open question with a variety of results but 93% of the respondents think professional orientation is biased.

Question 7: Had there been an online tool allowing you to have easy and simple access to information, to refine your profile and to get a regular follow up on your orientation, would have used it?



Question 8: if this tool had been an app on your phone which you could have used regularly, would you have used it?



Appendix 2: Example of questions asked on Pyxis

French (on the app)	Translation to English
<p>Que pensez-vous de la prépa ?</p> <ul style="list-style-type: none"> - Vous préférez entrer tout de suite dans le bain d'une école. - L'ambiance axée sur le travail et la compétition vous inquiètent un peu. - Deux années studieuses pour préparer les concours, engranger des connaissances et des méthodes de travail, parfait pour vous ! 	<p>What do you think of the prepa cursus?</p> <ul style="list-style-type: none"> - You would rather go to a university right away. - The competitive atmosphere worries you a little. - Having two studious years to prepare for the final exams, to gather knowledge and working methods is perfect for you!
<p>Les concours, ça vous...</p> <ul style="list-style-type: none"> - Motive à fond pour tout donner. - Paralyse complètement. - Stresse quand même pas mal. 	<p>Competitions...</p> <ul style="list-style-type: none"> - Are motivating. - Completely paralyze you. - Are challenging, but you like it.
<p>Le genre de devoirs où vous vous sentez le plus à l'aise :</p> <ul style="list-style-type: none"> - Les TPE (travaux personnels encadrés). - Les dissertations. - Les exposés. 	<p>You feel most comfortable:</p> <ul style="list-style-type: none"> - in a group project - writing an essay on your own - giving a presentation on your own
<p>Quand vous entendez parler de "stages en entreprise" à faire pendant les études, vous vous dites intérieurement :</p> <ul style="list-style-type: none"> - "Y'a pas urgence." - "Enfin, du concret !" - "Pourquoi pas ?" 	<p>What you feel about mandatory internships during your studies</p> <ul style="list-style-type: none"> - "Why not?" - "Finally, something concrete!" - "What does it mean?"
<p>Pour financer vos études, vous êtes prêt(e) à :</p> <ul style="list-style-type: none"> - Suivre une formation rémunérée en apprentissage. - Souscrire un emprunt à rembourser dans cinq ans. - Décrocher un job à mi-temps. 	<p>To finance your studies, you are ready to:</p> <ul style="list-style-type: none"> - Receive paid apprenticeship training. - Take out a loan to be repaid in five years. - Get a part-time job.
<p>A quelle fréquence lisez-vous la presse écrite généraliste ?</p> <ul style="list-style-type: none"> - Jamais - Quand j'entends parler d'un événement majeur - Une fois par semaine - Plusieurs fois par semaine - Tous les jours 	<p>How often do you read the papers (general news)?</p> <ul style="list-style-type: none"> - Never - When I hear about a major event - Once a week - Several times a week - Every day
<p>Quand êtes-vous allé au musée pour la dernière fois ?</p>	<p>When was the last time you went to the museum?</p>

<ul style="list-style-type: none"> - Il y a une semaine - Il y a un mois - Il y a moins de six mois - Il y a plus de 6 mois - Il y a plus d'un an 	<ul style="list-style-type: none"> - A week ago - A month ago - Less than six months ago - More than 6 months ago - More than a year ago
<p>Savez-vous dans quelle ville se situe le Parlement Européen ?</p> <ul style="list-style-type: none"> - Oui - Non 	<p>Do you know in which city the European Parliament is located?</p> <ul style="list-style-type: none"> - Yes - No
<p>Vous passez au tableau, vous êtes :</p> <ul style="list-style-type: none"> - Comme un poisson dans l'eau - sans notes - Pas très à l'aise - notes à portée de main - Plus ou moins à l'aise, ça dépend du sujet 	<p>When called up to the blackboard, you feel:</p> <ul style="list-style-type: none"> - Comfortable without notes - Not very comfortable - notes at hand - More or less comfortable, depending on the subject
<p>Pour réviser vos examens, vous préférez travailler :</p> <ul style="list-style-type: none"> - Dans le calme absolu - A plusieurs - A la bibliothèque - Chez vous 	<p>To study for your exams, you prefer to work:</p> <ul style="list-style-type: none"> - In absolute calm - With several people - At the library - At home
<p>S'investir dans une association étudiante, c'est :</p> <ul style="list-style-type: none"> - Un bon moyen de s'intégrer dans l'école - Une expérience de plus sur votre CV - L'occasion de s'essayer à la gestion de projet et au travail en équipe 	<p>Joining a student association is:</p> <ul style="list-style-type: none"> - A good way to meet other students - A good experience to put on your resume - The opportunity to try out project management and teamwork