STRATEGIC NOTE

PLAY BASED PEDAGOGY: A PRIORITY FOR REVITALIZING LEARNING

ANRT
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SUMMARY

These proposals are aimed at public officials and they highlight the importance of developing playful approaches to learning in schools, universities, and companies. The health crisis has revealed and even amplified, the inequalities in learning, the lack of motivation of learners and the inadequate training of teachers. At the same time, it has helped to stimulate innovation in the education sector, with the creation of educational games. Many of these games are the result of individual initiatives by passionate teachers who are often isolated and on the margins of official regulations. These educators are determined to transform their learning methods by infusing them with fun. These playful approaches are filled with assets on the condition that they are integrated not imposed, and that time is taken and clear rules are respected. They maintain students' motivation and skills and promote the transmission of behavioral and relational skills that are essential for finding one's way in a rapidly changing world. While the efforts of some pioneers have begun to blaze the trail, much remains to be done. This is why it is more than necessary to act in favor of "French-style play based pedagogy." "The time is ripe and expectations are high."[1] In this context, the members of ANRT address policy makers with a series of recommendations aimed at gradually and sustainably introducing play-based learning into educational practices. Among the proposed courses of action, they recommend:

- **Recognizing play-based education as a major issue**, by setting up a large-scale nationwide plan with the adequate manpower, organization, and budget, and by supporting the French EdTech business sector.
- **Accelerating the evolution of educational practices** by integrating advances in neuroscience research and by giving priority to support and awareness-raising activities and training, while recognizing the expertise of creators of play-based pedagogy.
- **Promoting the large-scale implementation of educational play based tools and the evaluation of their impact,** by intensifying collaborations between teachers, researchers, EdTech stakeholders and game publishers;
- **Modernizing or creating social spaces** to discover educational games.

Through these proposals, ANRT wishes to contribute to the legitimization of play-based education. Its ambition is to give those involved in the world of education and training the means not only to promote successful experiments, but also to perpetuate and generalize innovative game-based systems in order to revitalize learning in the name of the general interest - reduction of inequalities - and the individual interest - the personal enhancement of individuals.

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RECOMMENDATIONS

"French-style" play-based education

"The stimulus plan presented by the Government on September 3, 2020 includes a component dedicated to the digital transformation of education. Some 105 million euros will be devoted to the mainstreaming of digital education in the school system in order to reduce inequalities and fight against the digital divide." ANRT welcomes this action. But beyond that, it recommends the following:

- **Recognize play-based education as a prioritized pedagogical practice** by implementing a large-scale nationwide plan with the adequate manpower, organization and budgets.

- **Conduct a concerted national reflection on the evolution of playful educational practices within the framework of a "National Observatory."** This reflection will make it possible to determine participants, tools, and successful practices; to identify expectations, needs, and difficulties; and to propose measurement tools to evaluate playful educational resources. ANRT's ambition is to contribute to the public debate on this issue.

- **Involve educators, school leaders, and local authorities in the process of purchasing the playful learning materials** that they need in order to create open market conditions.

- **Extend the video game tax credit to all play-based educational game**s. In 2007, "France developed a tax policy by means of a video game tax credit. This credit was increased in 2017 from 20% to 30% of the total amount of eligible expenses incurred by the video game company. Its ceiling was raised from €3 million to €6 million per company per year. The game must not have a development cost of more than €150,000, be marketed, and must be created by French and European partners." Reforming this tax measure to include the production of all play-based educational games, without being exclusive to only "video games," would have an impact on the development of the industry and, more broadly, on the attractiveness of France.

- **Adopt a single VAT rate for educational games**, identical to that of books at 5.5 %.

- **Stimulate the structure of the French EdTech ecosystem**. It's noteworthy that the EdTech sector is mainly composed of start-ups: "65% of them have less than ten employees and 60% have a turnover of less than €500,000." The idea is to create investment funds alongside venture capital companies, with the aim of providing the capital needed for start-ups to reach the size necessary to conquer foreign markets and compete with the American and Chinese giants.

- **Accelerate the development of digital infrastructures throughout France**, for example, by improving the bandwidth of online educational platforms.

- **Strengthen the legal system for data protection** in the field of education and training.

Developing fun and cross-disciplinary skills in teaching practices

- **Transform educational practices by integrating advances in research in neuroscience and cognitive psychology**. "Cognitive science must play an important role in the training of teachers in neuroeducation, by providing courses in all National Institutes of Higher Education (Inspe), and maybe by using a massive online course (mooc)."

- **Intensify collaborations between researchers and teachers to develop learning through research, from preschool to university and beyond.** One example is the P'Tit Prof project, a CréativLab winner that is part of the Ampiric project. It is an educational application developed by the company SBT Human(s) Matter. It is based on the principle of the flipped classroom, which allows primary school children to learn by playing teacher. The objective of this project is to co-create a new version of the application adapted to classroom use in collaboration with the Réunion des musées nationaux - the Grand Palais, researchers from the University of Aix-Marseille and teachers from the Aix-Marseille school district. It will be adapted to use in schools, and enriched with artistic content to develop curiosity and openness to different cultures. Beyond that, this collaboration between teachers, researchers, and

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representatives of companies has the advantage of circulating knowledge and changing pedagogical practices.

- **Create a repertoire of cognitive and emotional skills for learners to be acquired and applied to to national educational programs.** This recommendation is "all the more important in the French context, since the level of declared student well-being is one of the lowest among European countries." However, it is "the development of students' emotional well-being at school that subsequently predicts life satisfaction in adulthood. Improving learner well-being and self-confidence should be one of the major priorities and levers of progress for the French educational system."

Prioritizing the Support of Participants

- **Develop an effective plan for training teachers in play-based education.** Professionalization should be given to individual teacher training initiatives. Training in play-based pedagogical practices will help modernize learning methods and give willing teachers the means to obtain professional recognition;

- **Recognize the creation of play-based educational games as an intellectual contribution in teacher evaluation.** In the context of their career development, "playability" could constitute a positive criterion for promotion.

- **Set up "playful learning communities" in school libraries, university libraries or in third spaces**. The idea is to create spaces for exchange in the form of conferences, workshops, debates, and within which the skills of some, and the know-how of others will be blended. On the one hand, the goal is to make participants aware of the culture of playfulness; and on the other hand, the goal is to convince the most resistant of play-based education's worth by giving them the codes and keys necessary to appropriate playful methods and, if they so desire, to embark on the adventure.

- **Establish a local overview of innovative play-based education initiatives at the school and university level to develop a nationwide network.** As an example, the laboratory of academic research, development, innovation, and experimentation (CARDIE) in the Aix-Marseille-school territory has identified all the innovative actions implemented in its district. They are centralized in the national database called the "*Innovathèque*" of the Ministry of National Education and Youth. This initiative aims to circulate information, promote good practices and connect participants.

Promoting the "scalability" and evaluation of playful educational tools

- **Build partnerships between educators and companies within the EdTech sector to develop large-scale fun educational applications.** In order to do this, incubators must be created to enable stakeholders to get to know and understand each other's interests. It would be beneficial to provide funding in the form of subsidies or repayable loans when financial success is attained, in order to support the development of these structures.

- **Test and evaluate innovative experiments.** The Ampiric CréativLab offers testing of innovative educational resources in an experimentation room, and then awards those that have proven themselves. "From this perspective, the tested and certified actions will gradually provide empirical evidence informing the direction of public action."

- **Encourage local governments to co-fund the purchase of positively evaluated fun educational materials.** These materials would be made available to learners and teachers.

- **Encourage game publishers to enter into agreements with schools, universities, and training institutions** to encourage the lending and use of their titles by educators.

- **Transform school and university libraries into "game libraries."** The educational games would be collected, stored, and loaned to learners and teachers, who would benefit from the expertise of librarians.

- **Involve school principals and academic superintendents in the transformation, stabilization, and dissemination of innovative teaching practices.** To guarantee their success, these practices require authorizations to equip a room, purchase material, and train personnel in the use or maintenance of technical equipment, etc.

STRATEGIC NOTE

1. GENERAL CONTEXT AND STAKES

In a world of constant and rapid change, education and training constitute a fundamental component for the development of individuals, social cohesion and the economic development of France within the "knowledge society"[2]. However, from the point of view of participants in educational practice, as well as of experts, or international surveys, the observation is clear: the school system and vocational training perpetuate, or even accentuate, social inequalities and suffer from failure of pedagogical practice renewal. This is all the more true in these times of the pandemic. The Covid-19 pandemic has indeed exacerbated educational, digital, economic, and social disparities, an increase in school dropouts, and a growing lack of motivation among learners' motivation, difficulties in accessing the Internet and technical equipment, as well as deficiencies in digital training and use. Faced with this emergency situation, many educators regret not having been prepared "to do anything other than transpose the lessons they were used to giving in classrooms or lecture halls on to a screen. "[3]

However, "the crisis has also stimulated innovation in the educational sector. Changes that were once considered difficult or impossible to implement are now possible."[4] In this context, play-based education is expanding[5]. Many of these innovative systems are the result of teachers' individual initiatives or the increasingly frequent collaboration of teachers, researchers, and managers of socio-economic structures. They are motivated by the enthusiasm, passion, and interest they have for active teaching methods. Together, they are making considerable headway, most often outside of any academic recognition, to elaborate real, playful, pedagogical tools adapted to both teaching and business. These tools aim to improve learning methods, the way knowledge is transmitted, and training for tomorrow's professions. They also allow for continuity between school, work, and free time for learners, to recruit new talent, to access new markets, and to develop innovative management methods. This leads to "a change in the teaching and learning paradigm announced and long-awaited."[6] But, for the time being, this pedagogical transition remains in the early stages, and its trajectory is still unstable. It is important to act to accompany, accelerate, and sustain the changes underway. To achieve this, it is necessary for this transformation to be at the forefront of the political agenda. In order to inform the decisions of public authorities and drawing on the field experience of the members of its "Play-based education" working group, ANRT is sharing its findings and possible courses of action to revitalize learning.

For "French-style play-based education"

Play-based education is still in its infancy in France. In order to convince the most skeptical of the educational value of play, one needs to look only at the educational systems of the Nordic countries. In Denmark, for example, play is an integral part of school children's education. There are even schools where "all subjects are taught through role-playing. Ministry curricula impose knowledge to be transmitted. But within this framework, schools are free to organize them through play, which allows for learning and especially for remembering. Once an adult, employee, father, or mother, this learning based on exchange encourages the learner to communicate and work in synergy."[7]

As the Nordic model has been cited for several years as an example to follow, should we try to transplant it in France? The answer is no. Scandinavian countries' success in education and training are the result of a long cultural and political history that cannot be transposed. So what is the alternative? The most appropriate strategy is to adopt a pragmatic approach that takes into account personal investment and the undeniable inventiveness of participants. This means giving them a voice in order to grasp the meaning of the evolution of playful pedagogical practices, as well as the changes necessary to stabilize new skill sets.

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[2] Conseil Européen (2000), Conclusions de la Présidence, 23 et 24 mars, https://www.europarl.europa.eu
[3] Francis Lecompte (2021), « Galileo. L'éducation, zone d'hybridation prioritaire », In Management, juillet-août, n°296, pp. 24-25.
[4] Note de Synthèse des Nations Unies (2020), « L'éducation en temps de Covid-19 et après », août, p. 25.
[5] "Serious games, also called learning games or mind games, appeared in the early 2000s", Stéphanie Combe (2021), « Apprendre en s'amusant », In « Jouer », La Vie, Numéro spécial, n°3962-3963, 18 août, p. 40.
[6] Emmanuelle Villiot-Leclercq, « L'ingénierie pédagogique au temps de la Covid-19 », Distances et médiations des savoirs,

https://journals.openedition.org
[7] Agnès Villette (2018), « L'école où les manuels valsent », In WE Demain, n°21, mars, pp. 89-93

New Perspectives are emerging thanks to EdTech

More and more educators are turning to EdTech companies for digital solutions that can improve the learning experience in schools, higher education, and vocational training. These technologies constitute a powerful lever for the development of play-based education. While there is little doubt that the health crisis "has had a significant impact on the sector, with new companies being created, increased fundraising[8]" and "the implementation of innovative digital tools, gaining the EdTech market five to ten years, "[9] this trend should not stop there[10].

However, the EdTech sector is not without its weaknesses. These weaknesses are well known to government institutions: a complex market, with many players and services combining different business models; difficulties in collaborating with school teachers; cultural and structural obstacles in school purchasing processes by local authorities; lack of training for teachers the use of new technologies in their teaching practice; and the absence of a precise legal framework for data processing and protection. For all these reasons, it is urgent that government institutions act. A significant investment in EdTech has a double advantage: "it will allow us on one hand to respond to the challenges of quality and universality of training for citizens, and on the other hand, to preserve France's educational sovereignty in the face of the American and Chinese giants who today dominate the market on a global scale[11]".

[8] Siècle Digital.fr, « EdTech : focus sur un secteur en pleine ascension », 26 mai 2021, https://siecledigital.fr

[9] Marie-Christine Levet, « Développer une filière EdTech française pour préserver notre souveraineté éducative », *EdTechActu.com*, 11 juin 2021, https://edtechactu.com

[10] In fact, the EdTech industry was doing well before the health crisis. "In the last three years, the number of structures and start-ups created has increased by 47%, according to a recent study by Deloitte Digital and The Caisse des Dépôts. According to the EdTech Observatory, there are more than 500 contributors. The sector is in full expansion, is divided into distinct segments. It is currently worth 650 million euros and employs 7,000 people», *In Siècle Digital.fr*, « *EdTech : focus sur un secteur en pleine ascension* », 26 mai 2021, https://siecledigital.fr

[11] Marie-Christine Levet, « Développer une filière EdTech française pour préserver notre souveraineté éducative », *EdTechActu.com*, 11 juin 2021, https://edtechactu.com

COURSE OF ACTION

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- **Strengthen the legal system for data protection** in the field of education and training.

[12] « Plan de relance. Continuité pédagogique », https://www.education.gouv.fr
[13] Pierre-Jean Benghozi, Philippe Chantepie (2017), *Jeux vidéo : l'industrie culturelle du XXIe siècle ?* Département des études, de la prospective et des statistiques, Ministère de la Culture, p. 226-227.
[14] Siècle Digital.fr, « EdTech : focus sur un secteur en pleine ascension », 26 mai 2021, https://siecledigital.fr
[15] « Le plan d'action en matière d'éducation numérique (2021-2027) » va dans ce sens. It is an initiative of the European Union. This plan defines two priority areas: 1) fostering the development of a high-performing digital education ecosystem; 2) strengthening digital skills

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and competencies for digital transformation and competencies for digital transformation. Cf. https://education.ec.europa.eu/education-in-the-eu/digital-education-action-plan.fr

2. DEVELOPING FUN AND CROSS-DISCIPLINARY SKILLS IN TEACHING PRACTICES

There are numerous voices that explicitly demand a profound change in the way we learn. They criticize an educational and training system that is too rigid, "based exclusively on rational intelligence to the detriment of the body, emotion and imagination[16] " and incapable of adapting to the changes in the world or worse, accused of demotivating learners. The latter are finding it increasingly difficult to the obey rules imposed, rules whose meanings are not always understood. It is therefore no coincidence that a growing number of educators are turning to games. Whether they belong to the so-called board, simulation, or online category, those in the field recognize that educational games "belong, along with art and sports, among those activities in which people take pleasure[17]". This observation echoes the results of neuroscience research. Stanislas Dehaene, professor at the Collège de France and holder of the chair in Experimental Cognitive Psychology, testifies to this. In his opinion, "stimulating curiosity and pleasure activates the dopamine circuit and sharpens the desire to learn." This is why "there is an urgent need to develop pleasure and the playful dimension in learning[18] ". The members of the ANRT working group share this conviction. Faced with what is rightly considered to be a gamble - play is often underestimated or even contested in a pedagogical context - they call for the transformation of learning practices by taking into account advances in cognitive psychology.

Providing cross-disciplinary skills essential for 21st century citizens

All the members of the ANRT working group attest to the fact that the use of educational games promotes the transmission of knowledge and cognitive skills that have long been kept at a distance from educational institutions. They develop teamwork, creativity, free individual expression, critical thinking, autonomy, and adaptability. Another important asset is that playful methods improve learners' self-esteem and confidence by giving them the opportunity to make mistakes. More specifically, "they allow pretending: it's the infantile expressions "it's not for real" or "it's like." They plunge players into a world of fiction, where failing is allowed, as is trying other things."[19] This gratifying dimension, of "having succeeded alone" despite failure, is essential to learning, as are "social skills, cognitive, and behavioral also known as emotional skills. This knowledge, forgotten or neglected in traditional teaching methods is essential for life, and living well together[20] ". Indeed, "recent research in the social sciences shows that these cross-disciplinary skills reinforce the development of academic skills and therefore professional success. They work against dropping out of school. And they have a direct impact on the development of national values and tolerance of others, as well as the economic and social performance and resilience of French society[21]". Therefore, it seems necessary in France to recognize social-behavioral competencies in national educational programs in the same way as cognitive and technical skills, as they are the elements which now make a difference on the job market.

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[16] Pascale Lismonde (2002), *Les arts à l'école. Le Plan de Jack Lang et Catherine Tasca*, Éditions Gallimard, p. 19.
[17] Jean-Marc Leveratto (2006), *Introduction à l'anthropologie du spectacle*, La Dispute, p. 12.
[18] Stanislas Dehaene (2020), « Il a urgence à développer le plaisir à l'école », In Sciences Humaines, « Bonheur d'apprendre et d'enseigner. Enquête sur ces profs qui changent l'école », Les grands dossiers de Sciences Humaines, n°58, mars-avril-mai 2020, p. 10.
[19] Martine Fournier (2020), « Jeu et éducation : une histoire contrastée », In Sciences Humaines, « Bonheur d'apprendre et d'enseigner. Enquête sur ces profs qui changent l'école », Les grands dossiers de Sciences Humaines, n°58, mars-avril-mai 2020, p. 67.
[20] Bénédicte Gendron (2020), « Les émotions, c'est capital ! », In Sciences Humaines, « Bonheur d'apprendre et d'enseigner. Enquête sur ces profs qui changent l'école », Les grands dossiers de Sciences Humaines, n°58, mars-avril-mai 2020, pp. 18-19.
[21] Ministère de l'Éducation Nationale, de la jeunesse et des sports (2020), « Quels professeurs au XXIe siècle ? », *Rapport de synthèse rédigé à la suite du colloque « Quels professeurs au XXIe siècle ? »*, organized in December 2020 within the framework of Grenelle de l'éducation, p. 12.

COURSE OF ACTION

- **Transform educational practices by integrating research advances in the field of neuroscience and cognitive psychology.** "Cognitive science must play an important role in the training of teachers in neuroeducation, by providing courses in all National Institutes of Higher Education (Inspe), and perhaps through a massive online course (mooc) [22]".

- **Intensify collaborations between researchers and teachers to develop learning through research, from preschool to university and beyond.** One example is the P'Tit Prof project, a CréativLab [23] winner that is part of the Ampiric project.[24] It is an educational application developed by the company SBT Human(s) Matter. It is based on the principle of the flipped classroom, which allows primary school children to learn by playing teacher. The ambition of this project is to co-create a new version of the application adapted to classroom use in collaboration with the *Réunion des musées nationaux* - the Grand Palais, researchers from the University of Aix-Marseille, and teachers from the Aix-Marseille Academy. It will be adapted to use in schools, and enriched with artistic content to develop curiosity and openness to different cultures. Beyond that, this collaboration between teachers, researchers, and representatives of companies has the advantage of circulating knowledge and changing pedagogical practices.

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[22] Stanislas Dehaene (2020), « Il a urgence à développer le plaisir à l'école », In Sciences Humaines, « Bonheur d'apprendre et d'enseigner. Enquête sur ces profs qui changent l'école », Les grands dossiers de Sciences Humaines, n°58, mars-avril-mai 2020, p. 11.
[23] Le CréativLab Ampiric est coordonné par l'ANRT.
[24] Ampiric est lauréat de l'appel à projets « Pôles pilotes de formation des enseignants et de la recherche pour l'éducation », géré par la Caisse des Dépôts et Consignations au titre du Programme Investissements d'Avenir.
[25] Adrew Clark, Sarah Flèche, Richard Layard, Nattavudh Powdthavee, George Ward (2018), The origins of happiness: The science of well-being over the life course, Princeton University Press.
[26] Ministère de l'Éducation Nationale, de la jeunesse et des sports (2020), « Quels professeurs au XXIe siècle ? », Rapport de synthèse rédigé à la suite du colloque « Quels professeurs au XXIe siècle ? », organisé le 1er décembre 2020 dans le cadre du Grenelle de l'éducation, p. 20.

PRIORITIZING SUPPORT OF PARTICIPANTS

The success of playful pedagogical practices in schools and workplaces and its development is not something that can stand on its own; it must be encouraged and supported. This challenge can come about through the evolution of traditional teaching, the recognition of new skills and the creation of structures for awareness raising that allow all individuals to freely engage in play-based education.

Recognizing game masters' expertize

All the feedback concurs: the use of game-based teaching methods depends on the game masters' free choice and their self-training efforts. Their conduct is motivated by their initiative, enthusiasm, creativity, and interest in active teaching methods.[27] Most of them already have a playful culture, due to their personal practice of games in their free time. Their role is essential. On the basis of their practical experience, they imagine and define the content of their playful teaching sequences. "Their job is not to apply methods, but to design learning situations that vary in form according to the pedagogical intentions and contexts. A trainer is an interpreter, a translator. Far from being someone who executes a method by integrating technologies in his practices, he must be considered as a creator of the uses he promotes in his class[28] ". This "expert skill" should be recognized as an intellectual contribution when evaluating teachers, especially when it leads to the creation of a teaching game. Thus, "playability" could constitute a favorable criterion for promotion and access to a higher grade in an educator's career.

Training educators in the rules of the game

As we can see, the success of an educational game is not an easy task. It relies on the know-how of the multiple skills of the game master. He must be able to be an educator, facilitator, organizer, and manager all at the same time. He must "put the time of the game in parenthesis" and "make sure that the situation holds together [29] " by obtaining the commitment of the learners and by helping to develop "flow".[30] That is, a state of high concentration, where time seems to stand still for an individual, "caught [31] " in an activity that provides a sense of accomplishment.

The design of a playful educational sequence also requires making knowledge more attractive by bringing it closer to the learners' personal culture. Moreover, it offers the possibility of setting up "cooperative learning, which is done in teams, but where each person learns and improves with the help of the others[32] ". All this requires defining the framework of the game, which is structured around three stages:

1) The instructor puts the learners in a situation, explaining the rules of the game and the educational objectives to be achieved.

2) He accompanies the players during the game.

3) When the game is over, he spends some time debriefing. This third phase is strategic. It is "dedicated to reflecting on the game as it was experienced by the learners[33] ". It aims to "identify the knowledge and skills incorporated, or those to be reinforced. The debriefing is also an opportunity to exchange points of view and thus to develop critical thinking. [34] ".

[27] Richard Le Fur, game designer and educational engineer at Prismatik, admits having been impressed by "the commitment and energy of the teacher-creators of games". Cf. Richard Le Fur, document de travail du groupe de travail Pédagogie par le jeu, 14 juin 2021.

[28] Eric Sanchez, Margarida Romero (2020), *Mythes et Réalités : apprendre en jouant*, Editions Retz, p. 118.

[29] Erving Goffman (1991), *Les cadres de l'expérience*, Minuit, p. 52.

[30] Mihaly Csikzentmihalyi (1990), *Flow, the psychology of optimal experience*, Harper Collins, Harper & Row.

[31] Sur la notion de « prise », Cf. Christian Bessy, Francis Chateauraynaud (1995), *Experts et faussaires*, Métailié.

[32] Ministère de l'Éducation Nationale, de la jeunesse et des sports (2020), « Quels professeurs au XXIe siècle ? », *Rapport de synthèse rédigé à la suite du colloque « Quels professeurs au XXIème siècle ? »* organisé le 1er décembre 2020 dans le cadre du Grenelle de l'éducation, p. 46.

[33] Eric Sanchez, Margarida Romero (2020), *Mythes et Réalités : apprendre en jouant*, Editions Retz, p. 119.

[34] Julian Alvarez, Damien Djaouti, Olivier Rampnoux (2016), *Apprendre avec les serious games ?* Canopé, pp. 88-89.

So how can we encourage beginners to take the plunge? By setting up innovative training courses which both guide and professionalize educators in their practice[35]. However, at the present time, everything remains to be done in this field. Pedagogical initiatives in the field of play are marginal, skills remain unstable, and content is difficult to evaluate. "Educators are often the only ones in their institutions to use play in the classroom or in training. As a result, they suffer from a feeling of professional isolation, a lack of resources and recognition[36]. In addition, the new skills are not recognized or valued at the institutional level either by a title, diploma or exam. In light of this, if we wish to develop play-based education, it is crucial to support the actions of these educators through training which offers certification and accreditation of skills, which could be taken into account in their career trajectory.

Acculturate and initiate through "playful learning communities"

The diffusion of playful teaching methods implies an evolution of mentalities. Even if play-based education is encountering success today, it still raises a lot of resistance. Some people are bothered by the playful dimension of the educational situation in relation to the "normal" functioning of a course. They are skeptical, and unconvinced of the merits of play for learning [37]. In the case of video games, they fear that children and adolescents will be overexposed to screens. Others feel unable to adapt their teaching methods and are helpless in the face of creative demands. Still others admit that they do not understand the video game practices of gamers and are unable to decode the messages conveyed by the games. In order to overcome this reticence, we encourage the creation of "learning communities" in places such as the school or university libraries or third spaces such as the CréativLab. In a friendly atmosphere, these communities bring together, educators experienced in play based pedagogy, learners, parents, educational officials, as well as researchers and business leaders. Their objective is to "pool individual knowledge to create collective knowledge. This must be organized around four main functions: 1) enabling the exchange of material 2) the sharing of good practices and experiences; 3) the launching of initiatives; and 4) improving specific skills. [38]. They thus constitute frameworks that will allow not only the circulation of individuals, skills and playful approaches, but also the establishment of a climate of trust. The aim is not to impose playful teaching practices. It is not a matter of coercing educators, but to acculturate and introduce as many people as possible to play-based education, and more broadly, to the culture of play.

[35] As Marion Tellier, a professor at Aix-Marseille University, points out, "using fun educational tools is something that can be learned by experimenting to understand their advantages. ». Cf. Marion Tellier, document de travail du groupe de travail Pédagogie par le jeu, 30 avril 2021.

[36] Julian Alvarez, professeur associé, Université de Lille et président de Ludoscience, document de travail du groupe de travail Pédagogie par le jeu, 25 juin 2021.

[37] François Lecellier, Lecturer at the University of de Poitiers suggests: « when using a playful educational method, the learning modality is is totally modified. The learners are no longer "receivers" of the knowledge transmitted by the educator but "actors" in the learning process. This can be disturbing for some. To reassure them, it is important to contextualize the playful situation. We don't want to suggest that learners learn to play, but that they learn by playing. ». Cf. François Lecellier, document de travail du groupe de travail Pédagogie par le jeu, 3 juin 2021.

[38] Ministère de l'Éducation Nationale, de la jeunesse et des sports (2020), « Quels professeurs au XXIe siècle ? *», Rapport de synthèse rédigé à la suite du colloque « Quels professeurs au XXIe siècle ? »,* organisé le 1er décembre 2020 dans le cadre du Grenelle de l'éducation, p. 63.

COURSE OF ACTION

- **Develop an effective plan for training teachers in play-based education.** Professionalization should be given to individual teacher training initiatives. Training in play-based pedagogical practices will help modernize learning methods and give willing teachers the means to obtain professional recognition;

- **Recognize the creation of play-based educational games as an intellectual contribution in teacher evaluation.** In the context of their career development, "playability" could constitute a positive criterion for promotion.

-**Set up "playful learning communities" in school libraries, university libraries or in third spaces**. The idea is to create spaces for exchange in the form of conferences, workshops, debates, and within which the skills of some, and the know-how of others will be blended. On the one hand, the goal is to make participants aware of the culture of playfulness; and on the other hand, the goal is to convince the most resistant of play-based education's worth by giving them the codes and keys necessary to appropriate playful methods and, if they so desire, to embark on the adventure.

- **Establish a local overview of innovative play-based education initiatives at the school and university level to develop a nationwide network**. As an example, the laboratory of academic research, development, innovation, and experimentation (CARDIE) in the Aix-Marseille-school district has identified all the innovative actions implemented in its district. They are centralized in the national database called "*Innovathèque*" of the Ministry of National Education and Youth. This initiative aims to circulate information, promote good practices and connect participants.

PROMOTING THE "SCALABILITY" AND EVALUATION OF PLAYFUL EDUCATIONAL TOOLS

Today, there is a wide variety of playful activities in the field of education and training. Educators have created these activities in an effort to reconsider their means of action and to increase their educational effectiveness. However, it is difficult to quantify and evaluate this development since, most of the time, these practitioners create their games during their free time, without any academic recognition. Therefore the members of ANRT believe that the stakes lie in ensuring that these innovations do not stay on a shelf or lie in a drawer. On the contrary, it is essential to encourage their capitalization by disseminating them on a larger scale. To do this, it is necessary to stimulate the links between educators, researchers, EdTech companies and game publishers, while putting in place procedures to protect, as well as evaluate these educational experiments.

Encourage partnerships with companies in the EdTech sector

We underscore the fact that play-based educational games are very often designed on a voluntary basis by educators, who deploy a wealth of ingenuity to develop "solutions adapted to their needs, to the learning context and to the learners"[39]. This is the case, for example, with the application "Canteen Green"[40], developed by researchers and engineers from AgroParisTech and INRAE[41], which aims to raise nutritional awareness among high school students. Another example is the "Da Vinci Code" escape game designed by Joël Verbauwhede, a teacher at Simone de Beauvoir high school in Vitrolles, whose objective is to encourage students to work together to solve science-related exercises[42].

In all cases, the challenge is great because the creation of an educational game requires a significant investment in terms of time and resources. First, it is necessary to make the relayed concepts attractive without distorting them. It's about translating knowledge into original scenarios around problems to solve, challenges to overcome, mysteries to unravel, and rewards to win[43]. Production arises once this framework has been instated. An educational game "takes a long time to design and must be done in several renditions, which can be costly[44] ". This is all the more true since, if the educator-creator is compared to a " handyman" according to the formula proposed by the anthropologist Claude Levi-Strauss[45]. It is crucial that great care be taken with respect to the graphic interface of a game, for example, the quality of the images, materials, or, in the case of a video game, the design, music or sound effects[46]. This results in taking into account requests by gamers who intensively consume games in their free time and thus have a valued background experience. Their consumption gives them the notion of an expert, which legitimizes their reaction to an educational game either through their acceptance, or rejection of it[47].

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[39] Stéphane Goria, maître de conférences, Université de Lorraine, document de travail du groupe de travail Pédagogie par le jeu, 18 mars 2021.

[40] Entretien avec Nicolas Darcel (2013), « Canteen : un serious game pour sensibiliser les ados à l'équilibre alimentaire », Culture Nutrition. Le média des tendances nutrition, https://www.culture-nutrition.com

[41] Institut national de recherche pour l'agriculture, l'alimentation et l'environnement.

[42] https://innovatheque-pub.education.gouv.fr

[43] Laurent Aldon, maître de conférences à l'Université de Montpellier, ne dit pas autre chose : « pour réussir une activité ludopédagogique, il faut passer du temps sur son scénario ». Cf. Laurent Aldon, document de travail du groupe de travail Pédagogie par le jeu, 27 mai 2021.

[44] Aurélie Privé Hanouille (2021), « Le jeu, support privilégié pour apprendre », Fiche CARDIE. As an example, As an example, "the price of the playful tools proposed by the company My-Serious-Game ranges from €10,000 to €80,000. Frederic Kuntzmann, CEO and co-founder, My-Serious-Game, explains: "for a high amount, the number of students can be unlimited. This allows the game to be amortized over several schools and to limit costs In Violette Nemessany (2020), « La Pédagogie par le jeu. Comment remettre les apprentissages en jeu ? », Rapport de synthèse, Les Cahiers FutuRIS, ANRT,p. 54.

[45] Dans son ouvrage La pensée sauvage, Claude Lévi-Strauss defines the figure of the primitive bricoleur as someone "who works with his hands, capable of accomplishing a great number of diversified tasks with the rule of his stakes is to always manage with the "means of the edge", that is to say a set of local resources (tools and heterogeneous materials), Cf. Claude Lévi-Strauss (1962), La pensée sauvage, Plon, p. 44.

[46] Clémence Rougeot, chargée de projet R&D chez Foxar specifies: "the ergonomics and the aesthetic aspect of the playful educational tools constitute an added value that can only be generated under certain conditions: the user's experience must be fluid and the aesthetic aspect must not attract the player's attention too much, at the risk of diverting him from the educational content to be retained." Cf. Clémence Rougeot, document de travail du groupe de travail Pédagogie par le jeu, 17 mai 2021.

[47] As Marion Vieu, lecturer at Aix-Marseille University, points out: "learners regularly play video games. They are demanding and sensitive to functionality, ergonomics and aesthetics .Cf. Marion Vieu, document de travail du groupe de travail Pédagogie par le jeu, 30 avril 2021.

Another important obligation is that the implementation of an educational game cannot be done without the support of school management, academic superintendents, or those in charge of training structures (obtaining authorizations to equip a room, buying equipment, training staff in the use or maintenance of technical equipment). In light of these elements, it is easy to understand why in France, the practice as educator-creators of educational games remains experimental and limited. Most of them do not have all the resources (financial and technological) and skills (marketing, commercial, administrative) to promote the transfer of their pedagogical inventions and to allow their commercial exploitation. To overcome these constraints, we recommend intensifying partnerships with companies in the EdTech sector. These collaborations can take several forms, such as one-time contracts to meet specific needs for analysis or skills, or longer-term partnerships that allow a game to be developed until it is validated in a real-world context. Beyond that, these partnerships offer a double advantage: the pooling of expertise but also additional human, technical, and financial resources; the knowledge of new professions in the gaming sector, which can be useful for learners looking for a professional path.

Agreeing on the terms of partnerships

In order for companies to foster a climate of trust, it is important for partners to explain and agree on the objectives and interests of each party, particularly with regard to intellectual property and the profit model. This is not always an easy task, given the different missions, cultures, and operating rules between the public sector and EdTech companies. In fact, the national education system generally makes it difficult for teachers to use "economic reason" to justify their actions. Some of them believe that supporting a market economy is contradictory to the spirit of public service and the educational profession. Participants in the EdTech sector, need to acquire "a better knowledge of the ecosystem of schools, educational institutions, and training structures, whether it be the functioning of the national education system and local authorities, the main orientations of educational policy, the real needs of teachers and learners, and the frameworks for using digital tools, resources and services[48]". From this perspective, the Ampiric working group and CreativLab coordinated by ANRT constitute ideal venues for the development of interactions between teachers and business leaders, thus helping to bring them closer together.

Creating game libraries in schools and training establishments

Schools, universities, and training establishments must make a concerted effort to promote the games developed by educators. One of the solutions would be to collect and store them in "local spaces" such as the libraries in secondary schools. Placed under the responsibility of a librarian, these centers have been welcoming students during their free time or during educational sessions since 1973. Their objectives are twofold. The libraries participate in media education for students by giving them access to numerous resources (books, magazines, digital platforms, DVDs). In addition, they promote reading through their actions. The libraries have attained a privileged position as an interface between cultural life, social life, and school life, which gives them a strategic role. It seems therefore, appropriate to modernize these traditional spaces by converting them into "game libraries." As libraries already do for books, the game library would lend educational games sometimes in the form of kits, to learners but also to teachers, so that with the help of a librarian they can choose, adapt, or divert games for their teaching. Finally, the transformation of the library into a game library will require public authorities to sign agreements with educational game publishers, encourage the loan and use of their titles in schools, as well as to authorize their modifications for educational purposes. This transformation could also affect university documentation services.

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[48] « Le numérique à l'école », L'Itinérant, n°1239, 30 août 2018, p. 9.

Evaluate innovations by developing partnerships with public research

Finally, can the effects of games on learning be scientifically proven? Is the judgment of their creators alone sufficient to prove the relevance of these playful educational approaches? For Jean-Marc Monteil of the intergovernmental mission on education and digital technology, the answer is no. He notes that "to date, the surveys on these new ways of learning are based on small samples and are more like satisfaction or opinion surveys than performance surveys[49]. He adds that "real scientific and multidisciplinary research must be undertaken to precisely measure the effectiveness of these playful tools. This must be done using evaluation methods that are quantitative, qualitative, and ethical"[50]. In this respect, we propose to create a label "to analyze precisely what effects on the whole of the educational community in order to identify the initiatives that deserve to be generalized "[51]. This implies establishing a close link between teachers, researchers, and company managers. These partnerships would make it possible to develop tailor-made evaluation methods to "take into account a complex and nuanced reality," since it is important to underline that "the use of the same game can have different impacts depending on the way it is used in an educational context"[52].

[49] Mireille Broussous, Centre-Inffo, « L'apprentissage par le jeu est-il efficace ? », 18 février 2020, https://www.centre-inffo.fr/

[50] Keynote de Jean-Marc Monteil lors de la conférence-débat : la pédagogie par le jeu, organisée par l'ANRT, le 6 février 2020 à Sorbonne Université. La vidéo est disponible sur le site de l'ANRT.

[51] Béatrice Kammerer, « Bien-être à l'école : de quoi parle-t-on ? », In Sciences Humaines, « Bonheur d'apprendre et d'enseigner. Enquête sur ces profs qui changent l'école », Les grands dossiers de Sciences Humaines, n°58, mars-avril-mai 2020, pp. 18-19.

[52] Eric Sanchez, Margarida Romero (2020), Mythes et Réalités : apprendre en jouant, Editions Retz, p. 123.

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COURSE OF ACTION

Build partnerships between educators and companies within the EdTech sector to develop large-scale fun educational applications. In order to do this, incubators must be created to enable stakeholders to get to know and understand each other's interests. It would be beneficial to provide funding in the form of subsidies or repayable loans when financial success is attained, in order to support the development of these structures.

- **Test and evaluate innovative experiments.** The Ampiric CréativLab offers testing of innovative educational resources in an experimentation room[53], and then awards those that have proven themselves. "From this perspective, the tested and certified actions will gradually provide empirical evidence informing the direction of public action"[54].

-**Encourage local governments to co-fund the purchase of positively evaluated fun educational materials**. These materials would be made available to learners and teachers.
- **Encourage game publishers to enter into agreements with schools, universities, and training institutions** to encourage the lending and use of their titles by educators.
- **Transform school and university libraries into "game libraries."** The educational games would be collected, stored, and loaned to learners and teachers, who would benefit from the expertise of librarians.
- **Involve school principals and academic superintendents in the transformation, stabilization, and dissemination of innovative teaching practices.** To guarantee their success, these practices require authorizations to equip a room, purchase material, and train personnel in the use or maintenance of technical equipment, etc.

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[53] As part of the Ampiric project, this experimentation room is being set up within Aix-Marseille University. Eventually, it will be part of the Cité méditerranéenne de l'éducation (CiMEd).

[54] Axelle Charpentier, « Comment évaluer les innovations pédagogiques ? », In Sciences Humaines, « Bonheur d'apprendre et d'enseigner. Enquête sur ces profs qui changent l'école », Les grands dossiers de Sciences Humaines, n°58, mars-avril-mai 2020, p. 75.