All Work and No Play Makes Jack a Dull Boy Is No Longer True

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Abstract
Education is not always funny, and teachers must motivate students in order to give them the sense of a constant work. Active learning removes apprentices from their safe place by establishing a situation where risk gambling is supported, as Howell (2021) explains in his investigation. This environment allows them to share their thoughts and highlights team building to increase their confidence, that's why active pedagogy is also becoming increasingly used in schools all around the world. It's time to change the ways learners get access to knowledge. Other studies starting with Bloom (1956), Le Brun (2004), but also more recently with the works of Cailliez (2016) and Dietrich (2018) have inspired me on the creation of a playful scheme. I will present you this pedagogical scenario built for my engineering school, after several trials in my Mathematics and Physics classes, in which games are present in three key moments: The first moment corresponds to the first session as an icebreaker workshop. Afterwards, the second key time is located around the middle of the scenario so as to check that the three first steps of the Bloom's Taxonomy are achieved. Finally, the last crucial moment is during the last course where a big immersive Escape classroom is organized to evaluate the entire competencies. Satisfaction surveys, feedbacks and success rate will also strengthen how this educational method needs to be well-known. This scheme is adaptative to any class level, number of students enrolled and to any topic.

Keywords: Active Pedagogy, Escape Classroom, Gamification, Numerical Tools, Scenario

1.   Introduction & Context of the Study

Nuruzzaman, A. (2016) highlights the fact that, through history, pedagogy has known a lot of ups and downs from an access to knowledge passing by a practice for the priviledged ones to a mean of oppression. A pedagogical revolution has started since the pandemic and has accelerated research concerning different methods of teaching and training in class or remotely (Miller, 2021).

1.1 What are Active and ludic Pedagogies?

Education has existed for ages and several types of pedagogies exist. One of the most tremendous pedagogy for these last few decades is active pedagogy. It corresponds to the fact that students are active in their own education and the classroom organization changes and becomes a problem solving environment instead of being a one way delivery or teacher centered environment as it is mentioned in the study of Van de Bogart (2009).

This learning method has hugely become a preferred practice to change the old-fashioned teacher centered classroom to a learner centered approach for a better knowledge. One of its strenght is that several techniques are possible in active learning and so the student don't get bored and are happy to work. Lenz Tagushi (2009) shows that a lot of cognitive activators, such as pre-set activities, let students focus on learning independently and where or when they want to.

Ludic learning is an example of active education. The specificity is that the philosophy and practice of this method includes fun, play, playfulness and humor into the learning process as it is described in the study of Lauricella (2022). Thanksfully, academic and intellectual rigor are still omnipresent. It integrates positive attitude and helps faculty into classrooms by creating a stressless and playful environment. These changes occurs an increase of engagement, motivation and learning outcomes (Lei 2010).

As it is highlighted in the study of Mooney (2018), fun is a great motivator because thank to this feeling, we can do a lot of activities, it is interesting to evolve the way students see education.

Thus, active and ludic learning have a preferred place in our society nowadays because they are a part of our needs and our approaches of knowledge (Proyer, 2011).

1.2 Is Gamification Useful for Education?

Gamification is increasingly becoming omnipresent in education. Students are no longer known as we thought with our traditional way of thinking as they go to school, sit at their desks, pay attention at the lesson, and take part in the "sit and get" way of learning all day long (Carneiro, 2007).

What is the best way for teachers to make students acquire knowledge? A lot of studies have been undergone to prove that using games could be the icing on the cake in education. There are a few examples possible such as cellphone application games like Kahoot, Factile Jeopardy, but also computer or board games like Scratch and get-up-out-of-your-seat games like Escape classroom games are interesting (Joseph, 2015).

A lot of reasons can explain how games are helpful in pedagogy:

Firstly, it is crucial that we need to find a way that we pay attention to our learners who live in a digital world. They use the Internet for everything, and they are used with immediate feedbacks, and they need to have instant answers all day long (Sun, 2015).

Secondly, games are fun and ludic learning too because they are enjoying time while playing without getting disinterested (Deterding, 2011).

Thirdly, as teachers, we are constantly searching to improve our courses in order to appeal our students.

Then, as the brain is a complex organ, we still don't know what the best way is to learn something and remember forever. So, it is interesting to experiment different way to acquire knowledge including games, social interaction, and friendly competition (Durdanović, 2015).

Thus, education, more precisely, teaching and learning methods are changing so as the world is becoming digital that's why if we teach as the old-fashioned way, without taking account of the multiple factors of our society, students are not learning adequately. Furthermore, we need to develop potential skills and knowledge needed to lead productive working lives (Scott 2015). Pedagogy should be tailored to the needs of each learner to help them reach their full potential. Students will be capable to interact with the society, deal with people from abroad cultures, while engaging in learning activities throughout their lives. This change is not only the responsibility of the teacher but of the entire nations and each one can contribute to a global pool of expertise on how best to implement the new century learning based on its context (Redecker, 2013).

As Uchechi (2021) explains in her study: "Education should prepare students to develop transferable skills such as collaborating among themselves to solve scenarios of real-world challenges, reflecting on their ideas, strengthening their critical and creative thinking capacities, showing initiative, and exploring analytical skills."

1.3 State of the Art Concerning Ludic Learning

Ludic learning has become very popular without a doubt and is set to be the most used education process for this century. Even if at the beginning, game-based learning was not welcomed, for about ten years, educational games have surprisingly become one of the most efficient ways of teaching with a newfound respect and enthusiasm. Nevertheless, given that gaming can be a problem for some students at school because of addiction, some teachers refused to try game-based education knowing that it's not easy for an educator to change the way of teaching and to use new technologies. Thinking about that, forms of play and games have been existed for thousands of years whereas traditional teaching have been only existed for hundred years, which can be very disturbing when we know some educators refused to try games in education as it is described during Adeeb Syed for Harvard university.

2.   The Importance of a Pedagogical Scenario

2.1 Why Do We Need a Scenario?

An educational scenario corresponds to the progress of learning sequence, the definition of the objectives, the planning of the tasks and the methods of assessment as it is presented in the following figure:
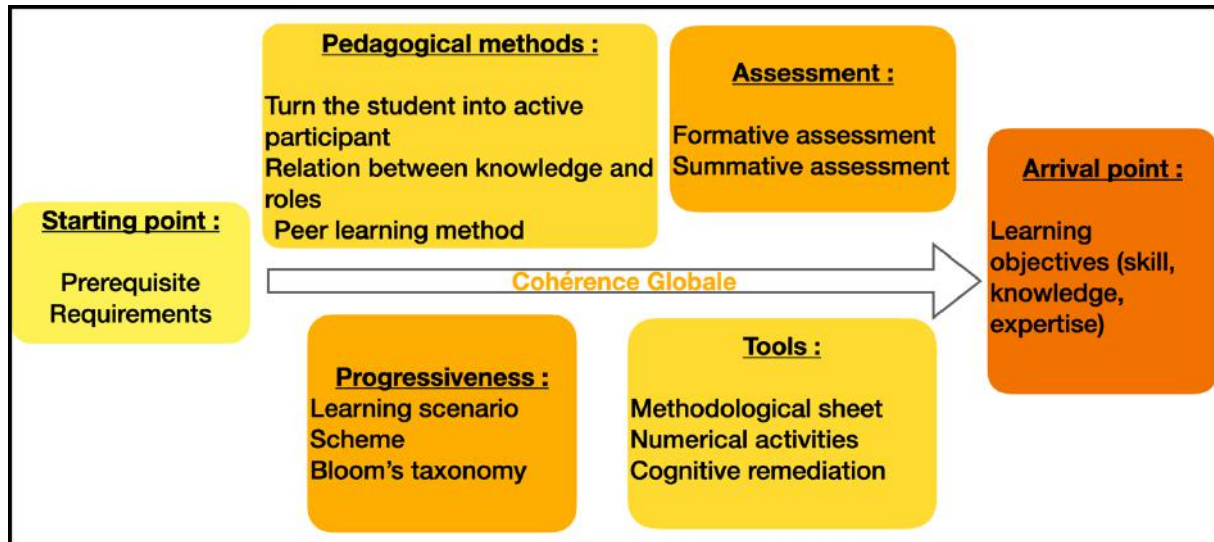

Figure 1: A pedagogical scenario

To organize a sequence, a teacher needs to know the prerequisite of the students to prepare remediation if it is necessary as a starting point. The learning objectives must be known so as to think up about the knowledge, skills and expertise requested as the final point. Then, the progressiveness including the learning scenario, the scheme and the Bloom's taxonomy is important to appear in the teacher's pedagogical sequence to guarantee the temporal organization. Two types of assessments can occur: the formative at home or at school to verify students' knowledge and the summative one at the end of the sequence. The tools type must be specified including numerical activities, the use or not of methodological sheet and a possibility of remediation for students in difficulty. The scenario helps the educators to highlight the pedagogical methods used such as peer learning process or active pedagogy.

Nevertheless, there are a lot of possibilities concerning how to insert activities in the educational sequence, that is what we call the useful scenario.

2.2 The Useful Scenario

This scheme describes how the numerical activities are inserted in the sequence precising the frequency, the purpose, the type of activities and the time remaining for each task. As there are a lot of parameters, there are a lot of useful schemes available.

The frequency is a key parameter because it arbitrates the number of activities used. On the first hand, if the activities occur too often, the students could weary and the motivation can decrease, on the other hand, if the frequency is too small, the impact of numerical activities would not be efficient.

The purpose is also a main parameter because an activity can be done as a traditional exercise, an ice breaker, an assessment, or a remediation. Numerical tools have the big advantage of instant feedback so it can be done for all purposes but this one need to be clear for the teacher and the students.

Every day, new software, and new technologies surface in the world so as in pedagogy. Kahoot, Factile jeopardy, Quizzlet, FizziQ, Wooclap, Moodle, Wims, Phyphox, Genially and more are numerical tools that can be served for pedagogy. In the following section, I will describe two applications I used a lot in school but there are a few examples of possibilities and features.

During a numerical activity session, the time passes faster than lesson or exercise session so the teacher must take care of the interval of time the numerical session can last.

3.   Presentation of My Ludic Pedagogical Scheme and Methodology

3.1 A Global Approach

After a lot of tries, I have finally built my own ludic scheme that is mapped and described below:
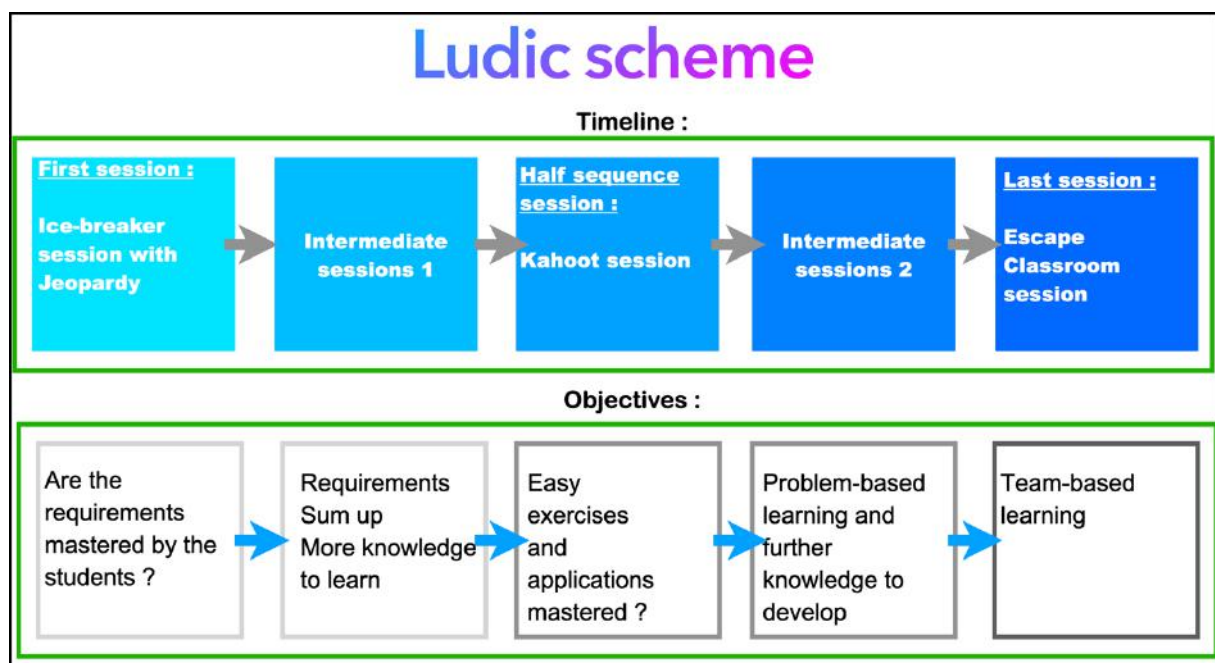

Figure 2: My ludic scheme

This fun scenario starts with the first session dedicated to an icebreaker activity in order to check if the requirements needed for the students are acquired or not. If it is the case, the next sessions will be the devoted to the progressiveness of the topic but if it is not, a session of remediation will be organized.

After that, traditional lessons and exercises happen until the half sequence session regarding the Bloom's taxonomy.

The next fun activity is a playful formative test online which is placed at the middle so as to check if the first part of the low difficulty and new skills are mastered. As previously, if it is the case, the next sessions will be the devoted to the progressiveness of the topic but if it is not, a new session of remediation will be organized again.

Then, high difficulty exercises and problem occur before the last session. This last session corresponds to a global-skill evaluation turned as a new playful activity.

Thus, this sequence is characterized by three key moments devoted to fun activities that will be developed in the next subsection.

3.2 Three Key Moments

3.2.1 First Step, the Icebreaker

The first key moment of the sequence is the icebreaker session with the application Factile Jeopardy (https://www.playfactile.com).

An icebreaker is a ludic activity which is helpful to start a session because it permits people to get to know each other but more precisely in education because it can be devoted to test the audience concerning the prerequisites. Teacher can use this kind of activity to help the acquirement of students with the content and the expectations of the sessions. This kind of ludic session is also handy for online classes to warm up students to participate from home. (Pelz, 2010).

They contain advantages in the classroom because firstly they motivate learners to share ownership for the education environment of the class. Secondly, they create a calm area where students can share ideas and participate more friendly and freely. Then, they can foster a productive pedagogical climate. Finally, they get ready students for team-based work.

For my part, I have decided to use Factile Jeopardy as an icebreaker because in a session of an hour, I can check up the requirements needed to go further for the progressiveness of my sequence, and I put the students in 5-people teams, and I choose six categories and I range the questions in order of difficulties (see figure 3).

Figure 3: Icebreaker session with Factile Jeopardy

3.2.2 Second Step, the Formative Test With Kahoot

Once half the sequence has been done, students are supposed to master the low difficulty skill and knowledge. So, it is the good moment to organize a formative assessment with a fun activity. For this purpose, I use Kahoot application (https://kahoot.com).

It is a convenient tool to break up the middle of the class or in the middle of a sequence to check for student understanding. A test of 10 to 20 questions summarizing all the previous program studied until this session is planned. It is a fun formative assessment which breaks with the traditional old-fashioned and boring evaluation, and it has also the great advantage of instant feedback and thus the teacher can easily evaluate the entire class quickly and be able to organize, if necessary, a remediation for students in difficulty (Barnes, 2017).

This would provide you with immediate feedback. I could also see it being used as an end of class activity.

3.2.3 Last Step, the Escape Classroom

The last key moment in my ludic sequence happens during the last session, it corresponds to an Escape Game session that I use to call "Escape Classroom". Thus, students compete against other teams so as to escape the classroom before it is too late because they have been locked in the classroom. I made the decision to use it to conclude my sequence because such activity is very interesting in pedagogy as it develops skills, encourage psychological skills too, but it also creates a taste for learning and grow a team cohesion (Sanchez, 2019).

During this session, I put students in group of 4 or 5 students and I give them an hour to practice this activity. For that, I build a pedagogical Escape game precising the context, the purpose, the challenges, and the secret code to find in order to succeed. I create 5 challenges that I organize with an increased difficulty (see figure 4). During this session, I evaluate all the knowledge acquired for all the sequence with this playful exercise.

Figure 4: Summative assessment with an Escape classroom

4. Results & Discussion

In the following subsections, we report the results obtained classified in two categories: the first one is located from the student's viewpoint and the second one in from the educator 's point of view.

4.1 Students' Outcome

The best way to collect students 'viewpoints and to show how this sequence has a good impact on the learners is to make a satisfaction survey that the students must fill in and when the results are gathered, they are analyzed and summed up in the following figure below:
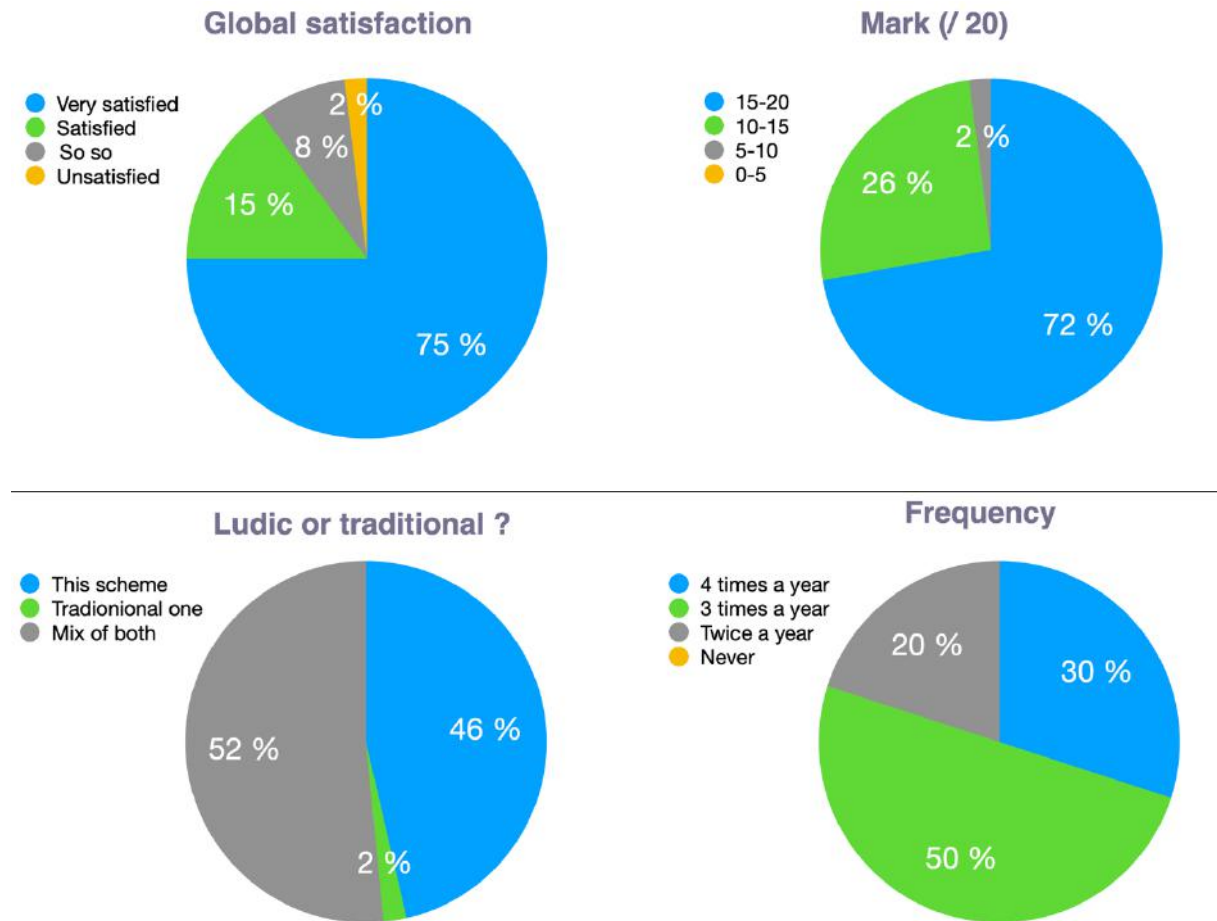

Figure 5: Results obtained from the satisfaction survey

This satisfaction survey is composed of 4 questions. The first question concerned the global satisfaction of the ludic sequence. The next question permits them to give a score out of 20 about this scenario. The third question lets them wonder what kind of scheme they like, the ludic one or the traditional one and the last one asks them about the frequency they would like to meet this scheme. These resulted have been collected during three years of teaching with this scenario for 250 students.

Regarding the answers, we can clearly make the following statement: more than 75% of the students are very satisfied about this teaching method and the average mark gotten for this scheme approaches 15/20 according to the students. The third question lets us believe that this ludic method is attractive for the students but a mix between the traditional and ludic method can be a good solution. Finally, the frequency of using this method needs to be think about in order to find the perfect match.

4.2 Teacher's Viewpoint

It is always important to focus not only on the student viewpoint but also to make a statement concerning the educators experience using this method.

On the first hand, building such a scenario is not easy the first time and it is a time-consuming process to build our one ludic sequence with imagining and preparing numerical activities that will be used for the course. On the other hand, there a lot of advantages. Firstly, it is very pleasant to see students 'motivation and pleasure to go in class. Secondly, with this approach, it is possible to do exercises more difficult in class. Furthermore, students get very good results at tests, and we have observed that the success rate has increased by 15% during the three years done with and compared at the same time with another class following the same courses but not with the same method at this is highlighted in the following figure:
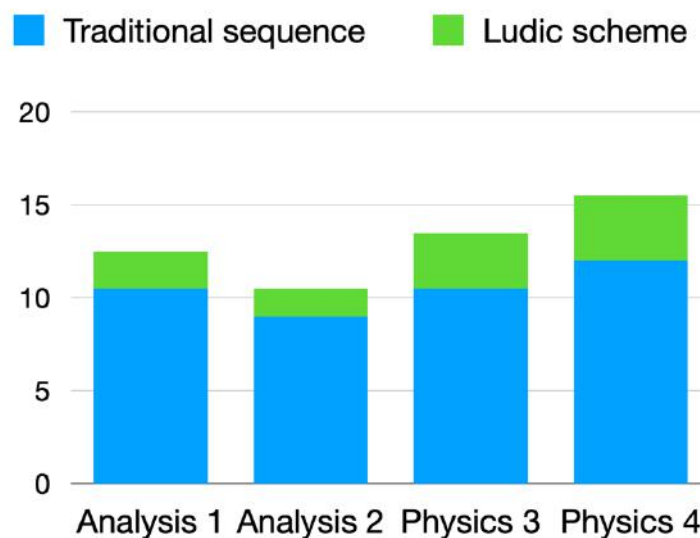

Figure 6: Comparison of students 'success rate between two methods

The mark has been calculated for each semester for three years. This comparison concerned 4 courses: Analysis 1 and 2 (Mathematics during the first and second semester) and Physics 3 and 4 (Physics during the third and fourth semester). For this comparison, at the same time, one group class has followed the traditional sequence and the other group class has followed the ludic scheme. The students can gain about 2 to 3 point out of 20 with this approach.

5. Conclusion

This article has presented a ludic scenario built for learners in preparatory classes in an engineering school in the south of France but can easily be adapted to a different level of knowledge and to any topics. This sequence is composed of three key moments using playful activities starting with a numerical icebreaker, followed in the middle of the sequence by a fun assessment using Kahoot and finishing with an Escape Classroom. What is interesting about this learning method is that students get great scores at the end of the semester in comparison to a traditional sequence and their motivation increased.

This sequence may be one of the first proof that playing in class is possible and can be a secret of their success rate.

That would be interested to export this educational approach in different topics so as to see how it can be modified in this way.

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