What are the characteristics/potentials that make this famous "videogame" a tool to support disciplinary and/or interdisciplinary teaching?

"In order to teach you must fell excited. But many still think that if you have fun you don't learn. "
(Maria Montessori)

Today in the school there is a constant talk about competences and that the pupil must mature. This means, to think about learning as a permanent process, in which the pupils need to be active builders with mature ability and critical spirit and thus be able to face the challenges that society will pose to them throughout their lives, demonstrating that they are able to make responsible and autonomous choices.
To ensure that this process is not enough only the reorganisation of the space and the time or insert technological instruments in the classroom, it is indispensable to profoundly modify the didactics.
The practice of teaching in the present day must also appropriate new technologies, because otherwise, as Vittorio Campione says, "The educational pathways will be destined for ineffectiveness". So you have to think of a school adapted to the time but that is incisive, this means that the teaching must therefore overcome the transmission model of knowledge, placing at the centre of the learning process the pupil, who must be the protagonist.
According to Antinucci «Learning takes place through perception and motor action on reality»: The individual perceives reality with the senses, integrates and intervenes on it. In this experiential path the pupil must be directed by the teacher. It is therefore necessary, because there is an authentic learning, that in school we experience what is fundamental that the pupil should acquire, not only in terms of knowledge but of skills to be experienced in situations of life.
The school must be a learning environment in which to experience a laboratory teaching that takes into account the experiences and "to enhance the differences, learn the similarities, and grow confidence of pupils."
If learning is then an experience in which pupils build, live, design and modify situations according to their needs solid, we must be aware that it is not always possible, however, to "bring the real world" into the classroom in order to have direct experience. Then the technology "reproduces models, in which it can be operated".

For example the pupil *Learns by Doing*, led by the teacher who knows how to transfer his disciplinary content and the multiple connections in the new alphabets of culture.

Talking about new alphabets means referring to the social cultural reality.

But you need to ask yourself whether learning through virtual worlds matches video games. The video game is a type of online world, in which it is expected that you play and where the player discovers the internal grammars of the game trying and re-trying, using the error as a non-repeating element to get to the solution. The player also has a reference community made up of other players, with whom he can

In virtual worlds you have a three-dimensional spaces on line, where the person is mediated by an avatar and together with other avatars can live collaborative experiences. In the virtual world, though, There is no game, there are no goals to achieve, rules to be respected or roles to interpret, that is missing all the conditions to be able to play.

So the substantial difference between the video game and the virtual world lies in the fact that the Virtua World it is designed and built by its own users. From an empty place you design a space where you can live an experience.

For several years now we have been using 3D virtual worlds for teaching. Virtual worlds are online 3D environments simulated by the computer, in which users – mediated by an avatar – can explore environments, help to achieve them, participate and design activities, communicate with other users. We Initially worked in Edmondo, of Indire, of which the owner is the researcher Andrea Benassi. There together with our pupils we have built several "islands" related to educational-didactic projects like The Dreams of Pinocchio https://youtu.be/FYBtofDrsHI and The Island of the Bruco Amedeo https://www.youtube.com/watch?v=M7TCcdrItBw .

Then the researcher Benassi proposed to us to experience another virtual world: Minecraft.

Minecraft is a video game of the sandbox type of Microsoft and our Comprehensive Institute Cremona Uno, led by Piergiorgio Poli, has been recognized by Microsoft as one of the 8 European Excellencies, we are therefore a Microsoft showcase school.

The program of Microsoft Showcase Schools recognizes innovative leaders and teachers in schools around the world. These schools make Part of a professional community that skillfully uses technology to guide digital transformation and efficiency inTeaching.

How did we use Minecraft?

In ed-Mondo, the virtual 3d world of Indire, the teachers had several trainings, then we led the pupils to learn how to manage the avatar and to build.

In Minecraft instead, children they have entered independently and safely, as they know this videogame well because they play in the hours of free time.

But we used this video game, emptying it of its rules, and we made a virtual space for Lines Environments, to propose learning experiences that would allow to create experiences designed to achieve certain educational objectives.

Other added value is that students themselves can collaborate in building an environment, within which to live an experience, using the tools made available in the virtual world itself. These Construction Tools help to give a real look to the objects in the environment that you want to realize.

At school we propose it as a tool for a Project Based Learning work, which for us becomes Game Based Learning. Pupils are driven to achieve long-term goals to solve problems similar to those they may encounter in real life. This is how the complexity and interdisciplinary aspects of an activity are highlighted in a more realistic way, developing the skills of the XXI century: creativity, collaboration, communication and critical thinking.

Why use Minecraft at school?

Because on Minecraft we try to use skills that our pupils have already acquire in their free time to achieve more effectively and ergonomically the educational and educational objectives that the school proposes. Our pupils have a whole percolation of education parallel to the school path in which they learn, in their free time, how to be good players. In the time spent in school they learn everything else. So why not try to put this together?

In Fact we think the app Game-based performance raises the attention of students, because it provides interactive experiences that motivate and actively involve students, because it accelerates the learning process and improves the retention of knowledge and finally introduces the student in a virtual environment that perceives as familiar and in which he feels the protagonist and at ease.

Minecraft
- It is a game that allows the creation of a virtual world

- Life in the virtual world stimulates the child to act and to overcome obstacles.
- In virtual worlds you have confidence in the next and you work collaboratively.
- is an inclusive tool
- You work hard and joyfully, because it feels useful and capable.
- Children like to be associated with missions! Feel like super-heroes.

What is the added value of Minecraft compared to a traditional lesson?
With Minecraft I can create interactive multimedia artifacts, for example: After studying the various forms of energy, our pupils simulated the movement given to the flags by wind energy, building a system of pistons moved by the virtual electrical circuit made with Redstone and propelled with a lever.
With Minecraft you can simulate situations difficult to experiment in reality as they happen in very distant or difficult to reach contexts. For example, a friend and colleague Luca Paolini simulated an Antarctic experience.
Minecraft is Also the ideal tool for STEAM activities, such as the Automatic Vegetable Garden, The Heart or still the Hydroelectric Power Plant Made by our pupils.

Why Minecraft Education Edition?
Because this version of Minecraft allows us to do coding with a virtual robot, the AGENT, to be programmed to work in our place, with an editor of choice between Tynker, MakeCode, Scratch...allows us to manage the classroom within the virtual world. With its extensions, teachers can manage the world's settings, communicate with students, provide guidance and teleport students to the world.

Tells us an experience of disciplinary and interdisciplinary activity that you have achieved with your pupils?
The last study on water as a source of energy, we completed after we went to visit the hydroelectric plant in Pizzighettone, territorially not far from our school. We started the didactic path by placing the pupils in a

driving question: *"Understanding the functioning of a hydroelectric power plant"*

Then we planned the work, the pupils were documenting on the water as a source of energy, through texts, reading books and then, when we visited the hydroelectric power plant, they posed a series of questions to the engineers. Back in class we have moved on how to organize the work, divided into groups the pupils have designed through drawings, after a study and the maps that had been provided, they achieved the construction of the plant in Minecraft. This was reproduced in the real scale and simulates the real operation: the water of the river enters the turbines that generate electricity.

https://youtu.be/dS_SJg_e8sI

There was then an additional comparison between the pupils and the engineers, who came to the classroom, to verify that all "the contents" had been correctly learnt and that the representation of the parts necessary for the operation of the control unit was correct.

Finally there was a presentation of what was done to the parents of the class.