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The Heuristic Method of Teaching CGI

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CGISchool

Learning Objectives

- Discover what the heuristic method is and how it applied for teaching CGI
- Find out the difference between traditional and heuristic method of learning CGI
- Learn about Blended Learning, Project-based Learning, and Peer-to-peer pedagogy
- See how CGI School implemented them to create a new learning program

Description

This is a story of how CGISchool developed a new program for teaching CGI which allows taking a student from the zero level to CGI Artist in 23 days only. Using cutting-edge teaching methods like Blended Learning, Project-based learning, and Peer-to-Peer Pedagogy, the CGISchool founders found a way to prepare skilled, motivated, and autonomous CGI artists.

Speaker(s)

Timothy Scherbatykh is the CEO and founder of CGI School. He majored in English Teaching and is now getting an MBA degree at Chicago Booth. Timothy's lifelong passions are learning, teaching, and CGI. To take them to the next level, he created a new type of school for training CGI artists.

Timothy has worked in the architecture, interior design, and construction fields since the 1990s. Then, he went on to search for the most effective and engaging teaching methods. Timothy implemented the findings in all his projects. He started his career at a Donetsk furniture company, then opened his design studio, and now is a founder of several educational and CGI outsourcing projects. Under his direction, the CGI School trained over 2000 students. Timothy regularly speaks at conferences about CGI and organizes them.

Looking for a new teaching system

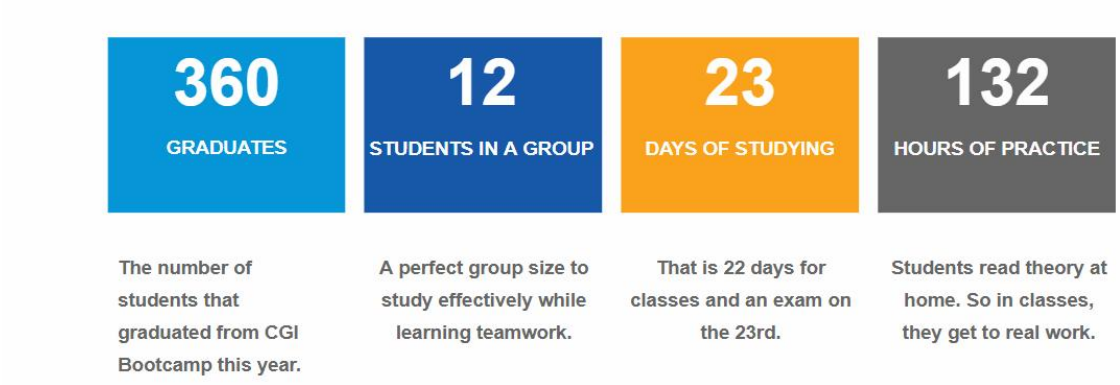
We opened CGI School with the specific aim to provide the market with strong CGI artists. We partnered with a recruiting company that helped with internships and finding jobs. So we had a portrait of a CGI artist the companies needed. We knew about hard and soft skills required, the attitude to work, and were confident we could do it.

We started as a traditional offline course. Yet few among our graduates went on to become professional CGI artists. On average, 4-6 out of 30. The rest didn't have the skills. We knew that there was an increasing demand for junior CGI artists, so we needed to do better than that.

In a couple of years, we decided to change and started to examine other methods on the market. We tried different formats and arrived at the formula we're using today. We're still working on it, as we see the room for improvement. Still, the results are already impressive.

And today, we're known as providers of strong CGI artists. The kind that persists and succeeds. Our new statistics say that half of a group finds a job after graduation. And a good job, too: in a few months, graduates earn what they invested into studying.

CGI School's New Statistics

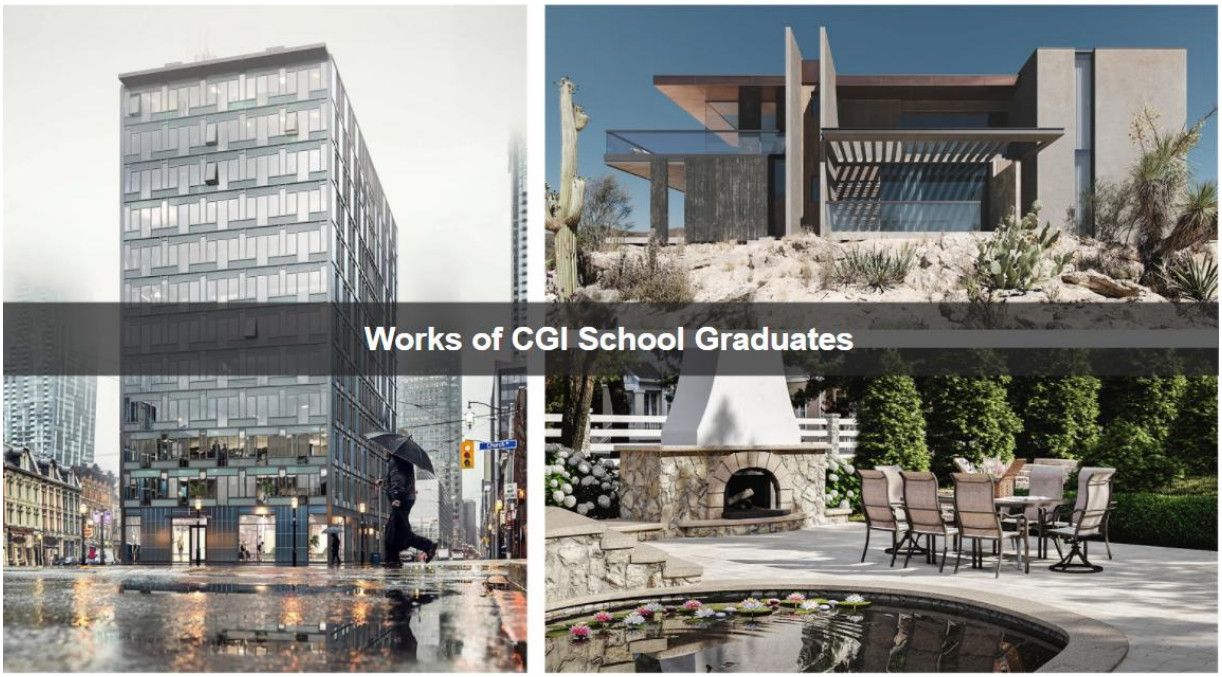


Here are a few stats showing where we're at now. Over all the years of existence of Bootcamp, we've supplied at least 400 CGI specialists to the market. The real number is probably much higher though. We just know about these 400 people for sure, because they continue to be involved in the CGI School project.

This year only, we've trained as many as 360 CGI specialists.
We've created a 23-day full-time training program, where students get 132 hours of practice.

We've reduced the group size to 12 students. We've found out that this is the best number of people to study in a group of this format. It makes for a comfortable work environment and is great for learning teamwork and applying the Peer-to-peer teaching method.

New Methods for new Results



These are works by our graduates who are now pursuing successful and fulfilling careers as CGI artists. They were our students once, and now they create such art pieces. They found jobs, upgraded their skills and are now rock-solid Senior CGI Artists. These are just the kind of specialists the market needs.

When we started developing the program, we saw that the traditional offline classroom was not the only option available. There were so many promising methodologies on the market! After a series of experiments, we selected and adopted 3 methodologies — Blended Learning, Project-based Learning, and Peer-to-peer pedagogy.

These conceptions are cutting-edge, yet have ancient roots. Project-based learning, for instance, could be traced back to Socrates. The Socratic method was for the students to search for answers and solutions to problems on their own, choosing the best ways to do it. That's why I called my presentation "The Heuristic Method of Teaching CGI".

Or take Peer-to-Peer pedagogy. It's used at the famous French School 42 for the purpose of teaching Software Developers. It's very agile, engages students into active participation, and teaches self-organization.

All 3 methods are extremely effective and I can talk about them for hours. But our time is limited, so I'll just outline to you the main principles of each. And then, I'll tell you how exactly we've implemented Blended Learning, Project-based Learning, and Per-to-Peer pedagogy for training market-ready CGI artists in 23 days.

Blended Learning

Blended Learning is a hybrid between traditional and distance teaching. There's still face-to-face communication with a teacher, but he answers questions rather than gives lectures. He's more of a facilitator, in fact. Students learn the material and go through assessments at home or in the class. This gives them the advantages of self-education, like the possibility to go at a comfortable pace.

Blended Learning is a hybrid between traditional and distance teaching. There's face-to-face communication with a teacher, but he answers questions rather than gives lectures. Students learn the material and go through assessments at home or in the class. This gives them the advantages of self-education, like the possibility to go at a comfortable pace.

And as students try to solve problems using this knowledge, they encounter difficulties. So they can search for ways to overcome them on their own or ask the teacher. The latter does not give straight answers, but helps a student to find a way to answer his own question.

As a result, trainees not only learn the 3DS Max interface but also master the basics of critical thinking. And in a real work environment, it's often not so much about the skills as it is about the ability to communicate and learn by oneself. And Blended Learning prepares students for working in a fast-learning environment.

And all those skills became vital when the lockdown began. For those able to effectively communicate, learn fast, and find solutions had all the advantages in adjusting to the new work mode and getting things done. And imagine a whole team of such CGI artists who don't need babysitting. It's a perfectly self-regulated team. As a result, the employers can be confident the project will be delivered in due quality and on time, no matter the difficulties.

Project-based Learning

CONTEXT-LED

There are no lectures. Students learn by working on a series of projects which simulate real-life situations – in our case, the everyday work of a junior CGI artist. This approach makes every exercise meaningful and important for the future.

EFFECTIVE IN LONG TERM

The teacher only guides the process and does not provide answers. Students come up with solutions on their own and within a specific timeframe. So instead of cramming, they explore and seek to understand, which leads to better memorization.

SELF-DIRECTED

Students take the initiative and manage their learning process. They can choose to work autonomously or collaborate with the team in order to find a solution. The focus is on social skills just as much as on intellectual development.

Project-based learning is a teaching method where students get a problem and look for a solution on their own. What's important is that the problem students analyze must be relevant to them.

That's why for classwork, we select the problems from real CGI projects. For that purpose, we have partnered with a CGI production studio. They provide us with real tasks from their work, and we use them as training material. These might be room rendering, exterior 3D rendering, 3D modeling tasks for game developers.

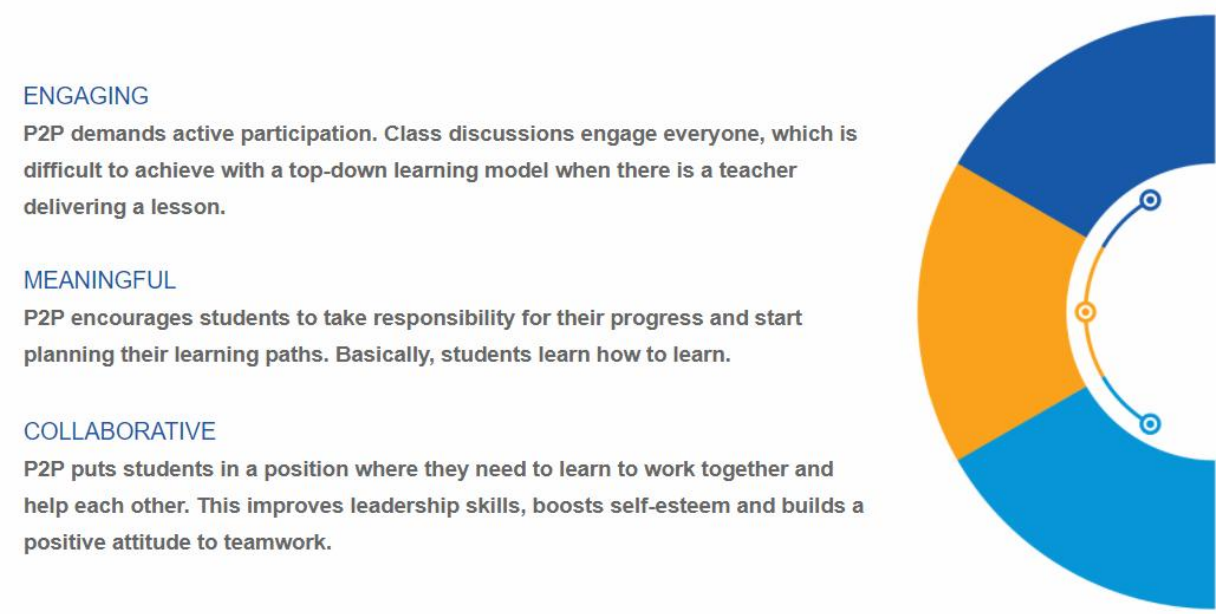
As a result, we keep training as close as possible to the real work process in a CGI company. In fact, our students basically start work during the training. This way, they won't have any trouble adjusting to a real workplace in a CGI studio.

Another important thing about project-based learning is that it requires close collaboration with the group and therefore fosters teamwork skills. And these are essential to productive work.

For after the training, a graduate becomes an employee - a part of a company. And they need to know when and how to ask questions, ask for help, provide help, share their experience. Can training even do that? Definitely. To prepare students for the future work situations, one can simulate those situations in training and show students how to deal with them.

And project-based learning is a perfect method for that. For when students encounter a problem, they can ask for help from other students or their mentor. The latter can sort of direct their thinking in the right way. It's such a pleasure to see them work together, and then arrive at a solution!
And most importantly, project-based learning is a great way to avoid thoughtless cramming. For when a person actively searches for solutions, they'll remember them for a long time. And that's the main feature of the program. Our students don't get knowledge, they get skills.

Peer-to-Peer Pedagogy



Peer-to-peer Pedagogy is everything I've mentioned earlier, but I want to tell you more. You see, this part drives me personally in creating and improving the new Bootcamp program. I used to be a Teacher and I studied Pedagogics at the University. Peer-to-Peer was not the most popular method at the time. It was hard to organize in an ordinary school that is controlled by lots of old rules and constraints. Yet there were a few outstanding teachers who practiced peer-to-peer learning, and they showed brilliant results. The method held so much promise that I couldn't get it out of my mind for years. And when we started to develop a new training program for CGI School, I realized it could be the answer. Turns out I was right.

And it still amazes me to see what the system can do. Because basically, it comes down to students learning to collaborate. If they have a really intense collaboration, they double or even triple the effectiveness of their studies.

Peer-to peer learning is an approach to teaching where the students need to collaborate in order to learn. They are basically teaching each other, which makes them actively involved in the process and highly motivated. Moreover, it's a great way to develop social and leadership skills.

Why is it so important? Imagine that after the bootcamp a person decides against becoming a 3D artist - I hope such cases will grow more rare year by year. Then, a CGI Bootcamp graduate will still get a nice skill set for communication, collaboration and leadership. These skills will come as assets. For they are essential in a world with lots of startups coming to the market. Today, showing initiative and being proactive helps build a career in any industry. So when you study hard skills, like 3DS Max software, as well as soft skills, like communication and building relationships - such education is bound to change your life.

How We Implemented Blended Learning, Project-based Learning and Peer-to-Peer Pedagogy

(1). LMS for Blended Learning

Now let's see how we've implemented Blended Learning. Our students read the material at home, and dedicate all the classroom time to practice. To make home learning easy and comfortable, we're using a Learning Management System. There are plenty of them on the market, and we're using Matrix LMS. It's very good, though there are things I'd like to improve upon. In fact, my dream is to create a custom Learning Management System for CGI Bootcamp by myself. For the moment, we're still using a third-party provider.

Our LMS contains all the materials and tests, is accessible via any portable device and can be downloaded as an app. This way, students can study when and where they choose. Plus, we still believe in the power of old-fashioned paper, so we distribute handout materials.

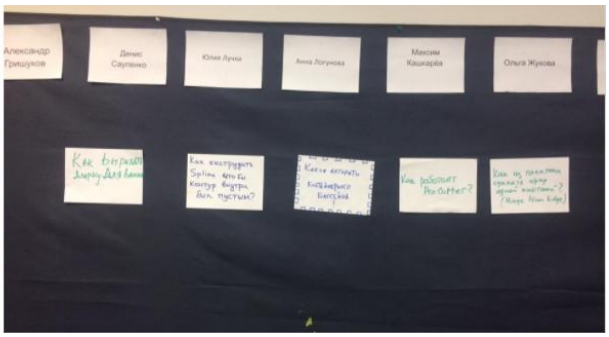
(2). Learning Teamwork

A CGI Squad

Teamwork is essential to succeed in CGI Bootcamp and in future career, so students work in a group of 6.

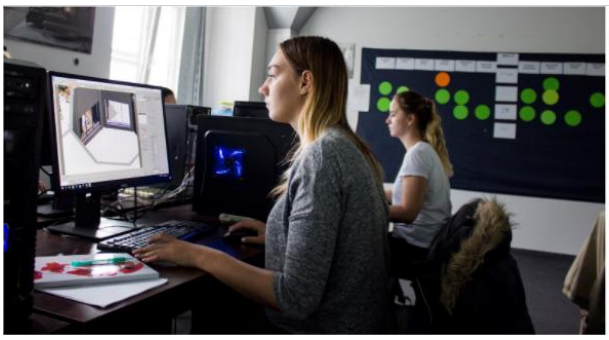
Students sit in small groups. A strong positive group dynamic is of huge importance, so we limited the number of people in a group to 12. This allows creating such an experience where students get competitive with each other, yet still are on friendly terms. It's a safe competitive environment. It pushes students to their limit, however, they still feel comfortable to ask questions without fear of looking less smart than others. Learners get to understand that there can't be such a thing as a stupid question, and the students treat each other as a family so no one expects to be judged.

(3). Interaction with the Teacher



This feeling of safety and comfort is very important for the upcoming facilitation too. At the end of each class, students write their questions on cards and pin them to the board. The teacher reads them aloud and answers. You know, sometimes we get such amazing questions that we include them in the program.

Interaction with the Teacher



We evaluate tasks completion with color-coded “bullet” cards. There are 3 options:

- **orange “bullet” card** means the student was the first to complete a task. Such a student helps others, for that’ll mean he or she is a cool leader. Moreover, we measure not only personal but also group success, so helping group mates succeed is in everyone’s best interest.
- **green “bullet” card** means that the person completed the task, and came second or later.
- **no card:** the student failed the task.

All the tasks are time-bound. We create them to be completed in 55 minutes. Before adding new tasks to the training, we test them and adjust if needed.

One of the troubles with distance learning and traditional classes is that they do not take into account realistic deadlines. Neither at the practical lessons nor at the exams. Huge mistake. For when a student spends a day on a task that should take only 1 hour, that means he didn’t acquire the skill. And if he gets a good mark, it does not mean anything. The same thing happens when a student spends a month on the exam work that a CGI artist would normally do in a day. That’s not a successfully completed task either. Once again, a good exam mark won’t mean anything.

In real life, projects have budgets and deadlines. That means, if an architect says they need the imagery in 2 days, the imagery needs to be ready in 2 days. Otherwise, they will need to postpone the presentation. This is the question of the clients’ goodwill.

Another reason why deadlines are so important is work costs. Every project has a budget, which includes the number of hours the specialist can work on it. For a CGI artist is normally paid per hour. So once the budget is set, the CGI artist needs to deliver results within the agreed time limit. More hours means higher cost, and the client is probably not ready for such a surprise.

In a nutshell, a CGI artist can’t work forever on a task. With such an approach, the newbie junior will find it difficult to survive in a real work environment. A CGI artist should not only create photoreal renderings but do it within realistic time limits. So it’s not only about building a scene,

adding tasteful details, setting the light, creating 3D models of the scene objects. It's about doing it on time, too.

A CGI artist should know how much time a task should take, which stages are most time-consuming, how to adjust the workflow to make them faster.

There is a multitude of things a CGI artist needs to know in order to save time. These may be basic things like materials presets. With their help, a CGI artist doesn't need to create zillions of materials from scratch for every project. They just take the presets and optimize them. Similarly, a CGI artist should know about new tools and methodologies on the market so as not to reinvent the wheel every time.

Being able to learn fast is even more important than the number of tools one has already mastered. These appear by hundreds every year, and it's up to the CGI artist to build up and update their virtual toolkit with new services and resources.

In this respect, the profession of a CGI artist is a bit dangerous. You have to be able to overcome the fear and start learning new things from scratch.

For in a blink of an eye, new technology can make everything you know outdated. Like, say, a new software release that would change the market.

Besides, every year brings new, more sophisticated software updates with more features and possibilities. And a CGI artist who wants to stay competitive needs to know and use them.

Right now we're teaching students to work with a product of Autodesk, for it's the standard in the industry. But there are lots of alternative choices for which we don't have programs. So we tell our students that they need to constantly learn other software. So as some technological breakthrough comes to market, they'd be able to learn it within 2-3 months tops. This is the only way to stay afloat and competitive. CGI Bootcamp should be the beginning of learning.

This is why the ability to manage their time is the most important skill for a CGI artist. And that's why we incorporated it into the CGI Bootcamp program. All tasks are time-bound, and we make no exceptions. In real life, a task sent after the deadline is the task the client doesn't need anymore. So in the training, the task submitted after the deadline is a failed one.

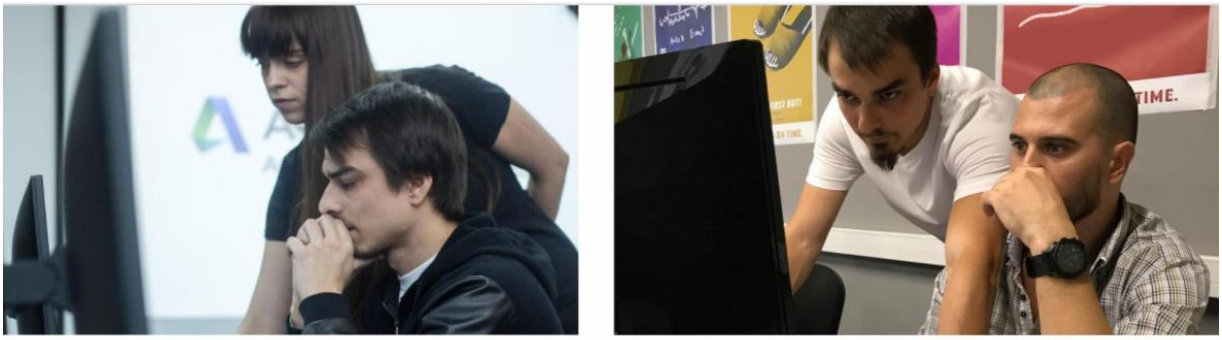
The final score of a student consists of all the completed tasks, or "bullets", as we call them. The maximum is 132. And if you get 132 bullets, it's highly likely that in the future you'll deliver all your projects on time. Such a CGI artist has all the chances of finding a great job.

Peer-to-Peer Pedagogy allowed us to simulate all these processes in the training group. This way, students see how others are working and overcoming obstacles, and help each other out. As a result, they bond over their shared challenges and form team relations. And this is their first taste of teamwork, and it forms a positive attitude towards it. They feel to be a part of a big team, a community with shared interests - and that's thanks to Peer-to-Peer Learning.

Helping Each Other

In the photo, you can see a student who was the first to finish the task and who chose to help others.

Mentorship Experience



A CGI Bootcamp student

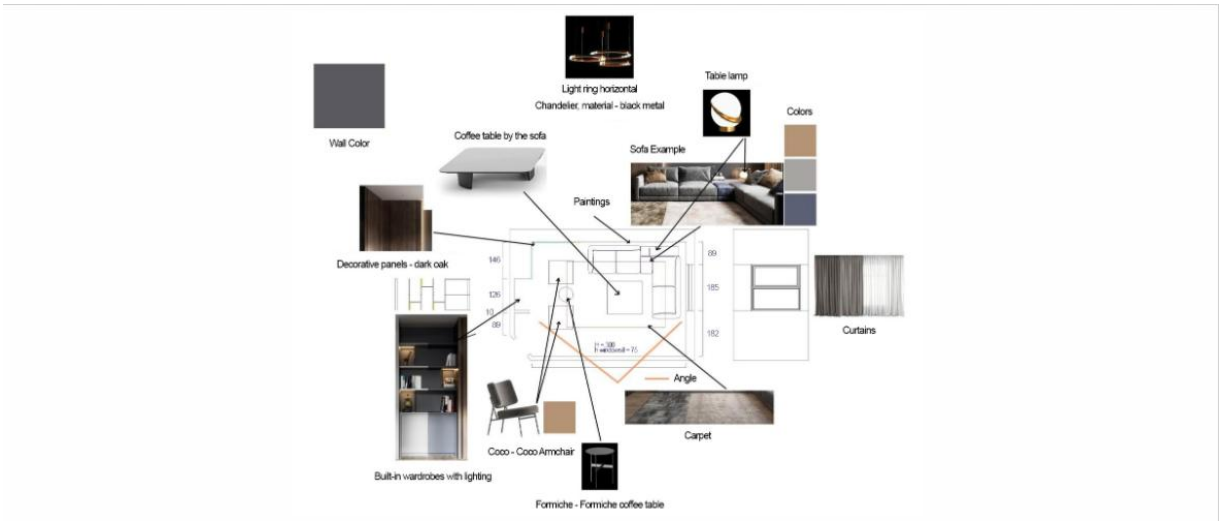
A CGI artist and Mentor

All our graduates come back to work with us as mentors. Like this guy. He created one of the renders I showed you in the beginning. Mentorship is an interesting experience for a CGI artist, and the students like to see someone who actually studied at CGI Bootcamp, someone who's more like them.

Progress Assessment

This is what a board with bullets looks like. The mentor’s calculating the scores.

Exam Task



Here, you see an example of an exam assignment. It’s taken from a real CGI project, and students must deliver the results in 7 hours.

Results

Students work on this task by themselves. The resulting 3D rendering should comply with our set of quality requirements, accord with the brief and the project context. Can you believe that the person who created this render has been using 3DS Max for less than a month?

Assessing Exam Results

The renders are evaluated against a set of criteria. These include the quality of materials, light and shadow balance, post-production, storytelling, detailing, and composition.

- **Materials:** should look like in real life in color, pattern, or grain, and reflect the light accordingly.
- **Lighting:** the 3D render should have the right chiaroscuro balance.
- **Render:** should have no intersecting objects and be post-produced correctly.
- **Storytelling:** the 3D render should tell a story through lighting, decor, additional elements.
- **Details:** the scene should have the right decor, and all objects are to be modeled in detail.
- **Composition:** the camera angle should make for a beautiful shot, with all elements balanced well.

Assessment Process

For the assessment, we form a board of various specialists working in CGI - CGI artists, Client Managers, Designers, Architects, Marketers.

CGI Community

We throw a party to greet new members of the CGI community. Which has over 1000 CGI artists that work together in one network! They share their knowledge, experience, help each other find clients, and spend time together. We organize all sorts of events for them. Like conferences, where we invite big industry shots from all over the world, and renowned CGI companies like Brick studio, Unbuilt, and more. We also organize sports challenges, and pretty crazy theme parties like the prom you see in the photo - artists need to make memories, too.

These get-togethers are often attended by Business Developers and Project Managers. So in this network, one can not only find a client or 3D artist but also get advice.

In addition to coordinating events, we initiate community meetings. We have leaders that create their own companies and startups. So at this point, the CGI community is a ground for creating companies.

We help with that, too. We have financial, marketing, and educational consultants. Basically, the CGI community has become a ground for startup incubation in the 3D graphics area. In fact, we know several companies that were created based on our school. They operate on their own, but they're part of our community and we're really glad that we're working with them.

What's in it for them? We help them find and hire good CGI artists, and fast. To students, we give possibilities to get jobs.

We know this market is growing dramatically. And next year, it can double. For big guys like Amazon, Target, and so on are thinking about using 3D and making it the main source of their imagery. And they use third-party providers for getting CGI content.

And there's also the video game and film industries, which are merging now. They need a lot of 3D modeling. So this market is hot, and we're trying to fill the need for fast-learning specialists.

As the market is developing so fast, so should CGI artists. For that purpose, we created new programs for Middle and Senior CGI Artists, hold seminars, and have plenty of other useful stuff. Seniors are a part of the CGI community too, so they get access to all these materials and tutorials. They also have access to the client's database, the coach, and mentor support.

As you see, what we're doing is not just about classes. We're trying to build a real academy here, and we're very glad to be introduced and invited to Autodesk Academy. I hope that this cooperation will be fruitful and last many years. We're grateful to Autodesk for their product that made it all possible, and for the fantastic Student Programs which give newcomers to the industry the possibility to learn 3D graphics.

That's especially important in Ukraine. We're a very young emerging market, and we have a lot of mature IT software developers. Now we're creating a CGI outsourcing market, and it's good that we have a strong relationship.

We're an authorized Autodesk center for learning 3DS Max and have long-term relations with them. So it's great to have the possibility to tell you about what we have.

Also, I'd like to thank the Teachers, Project Managers, Program Managers, those who created this program, our students, our CGI artists, and the whole CGI community. Thank you for making this happen.

I invite everyone to take part in our CGI community. Send us some information about you, and we'll add it to our database, and share our knowledge. For I believe that the larger this community is, the more wealth and prosperity it'll bring its participants. So thank you all and have a nice day!