# Cross-cutting methodologies in learning 3D modeling[1]

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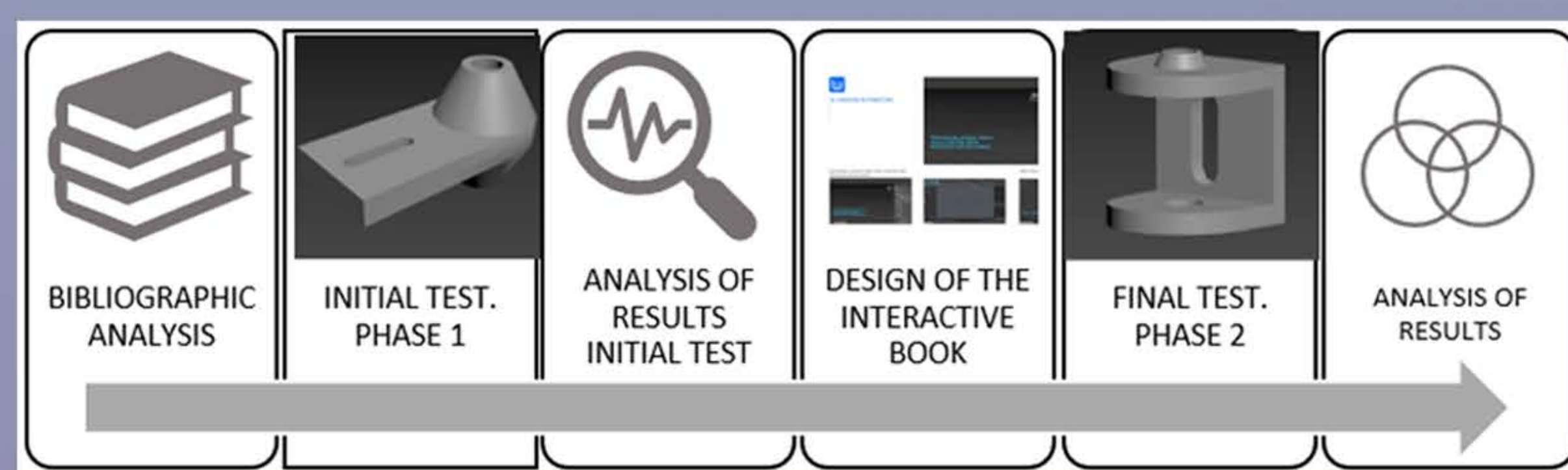
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## ABSTRACT

The training of 3D modelling professionals, due to the complexity of the software itself or the trends in the professional sector, tends to focus on the mastery of a single main tool, sometimes complementing it with other more specific texturing or digital sculpting tools. When students enter the labour market, even if they master the techniques of one software, they often need to improve or improve their professional profile by learning other tools, adapting their previous knowledge in a transversal way, almost having to start from scratch.

in terms of nomenclature, information or interaction, in order to carry out equivalent operations between these softwares. The creation of teaching materials that enable the acquisition of knowledge from the transversal mapping would help to reduce or optimise this adaptation process, while reinforcing the professional profile of 3D modelling students by providing them with complementary skills.

## OBJECTIVES

The objective of the research is to develop didactic materials that allow the use of transversal methodologies for learning 3D modeling.



BIBLIOGRAPHIC ANALYSIS | INITIAL TEST. PHASE 1 | ANALYSIS OF RESULTS INITIAL TEST | DESIGN OF THE INTERACTIVE BOOK | FINAL TEST. PHASE 2 | ANALYSIS OF RESULTS

## PROBLEM STATEMENT

Use in the 3D industry context of Different Sotfwares (interfaces, workflows etc.)

Need to train digital artists with transversal knowledge (gain versatility, permeability, adaptability and self-training.
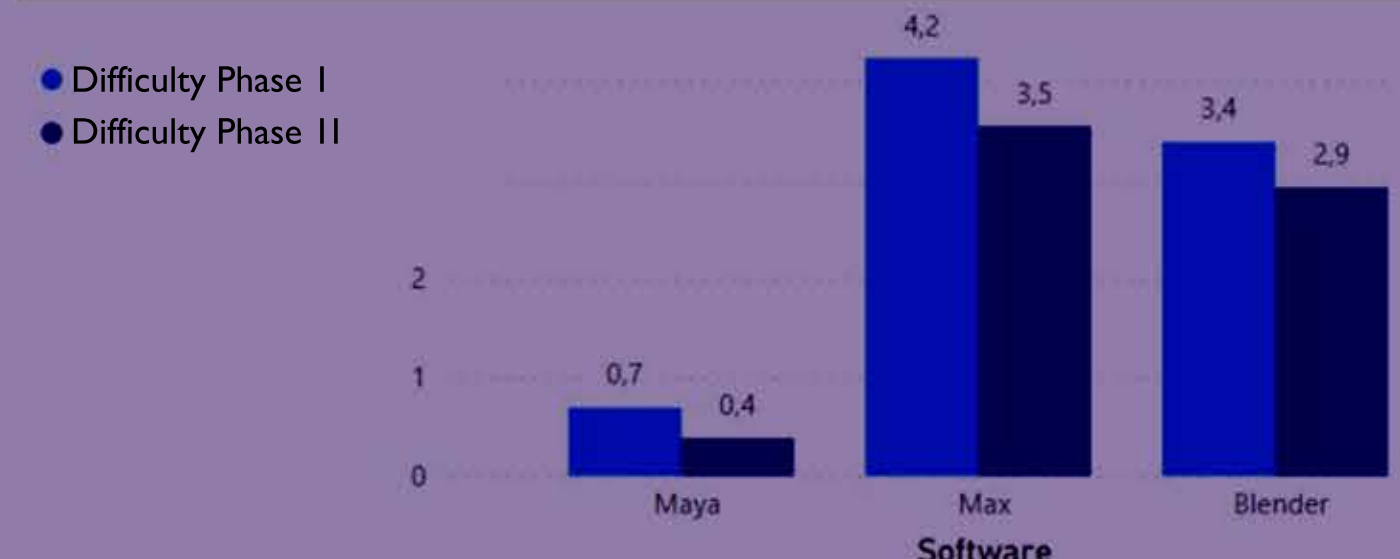
## MATERIALS AND METHODS

After detecting the existing problems in the transfer of knowledge between analogue 3D modelling software in the classroom, a series of concatenated tests were proposed to evaluate the effectiveness of the material to be generated. Thirteen students from different grades and courses voluntarily participated in an initial session in which they were asked to model a piece in three different software packages: Autodesk Maya, 3d Studio Max and Blender. They were asked to start with the software they knew best and to record the time spent on this first piece. Each student would have twice the time they spent in that first software to solve the same piece in the other two.

Internet or access any external help. At the end of the test, the students filled in a form with qualitative and quantitative evaluations of the experience, reflecting on the difficulties encountered, their level of knowledge and the time spent on each piece. Once the results of the initial test had been analysed, the tools and aspects that should be reflected in the materials to be provided to the students to support the second test were determined. The resulting interactive book was made available to the students and to evaluate its effectiveness they were asked, under the same conditions and time constraints as in the first test, to produce a new piece in the same three softwares. At the end of the test they filled in a new form similar to the previous one, evaluating the materials, the level of difficulty they had faced in each of the programmes and the areas for improvement detected.

## RESULTS

Evolution of difficulty before/after use of materials.



- Difficulty Phase I
- Difficulty Phase II

**The experience have been very well received** by the participants, being valued on a **Likert scale from 1 to 5: Autodesk Maya 4.62, Autodesk 3dStudio Max 4.15, Blender 4.38.**

**A decrease in difficulty in the use of the software has been detected** from the initial test to the test with access to the materials both quantitatively and qualitatively.

**The vast majority of students have shown less difficulty and confusion thanks to the consultation of the materials**, improving access to keyboard shortcuts, the use of the interface and the handling of objects and tools.



## CONCLUSIONS

- The materials developed have proven to be highly useful for students' cross-curricular learning.

- Although the first approach to the process includes all the usual elements of modelling, some processes and workflows not yet reflected in the created material would need to be expanded.

- In short future the materials will be directly implemented in undergraduate curricular classes. At the same time will expand the results increasing the population sample to broaden and deepen the case study.
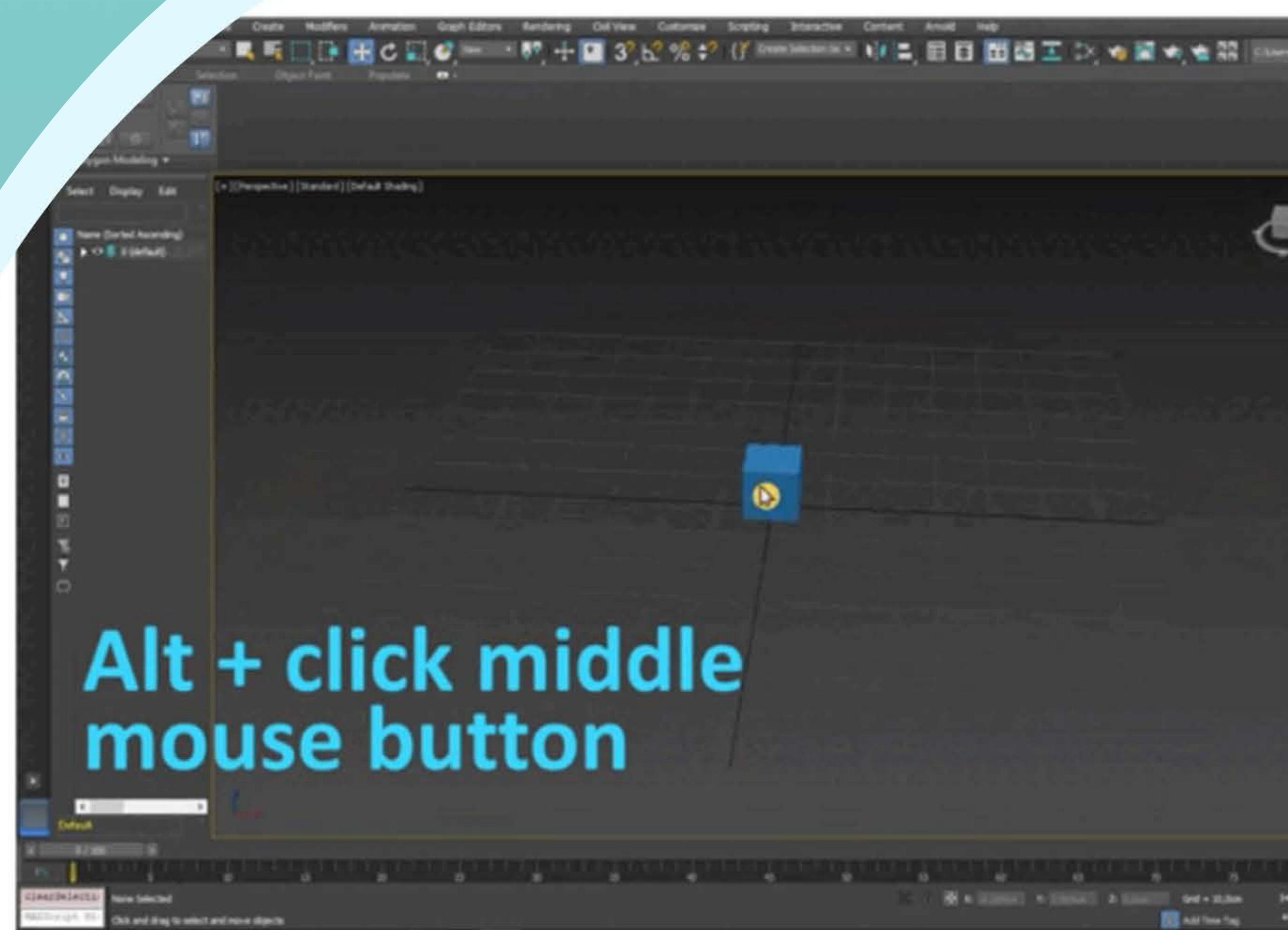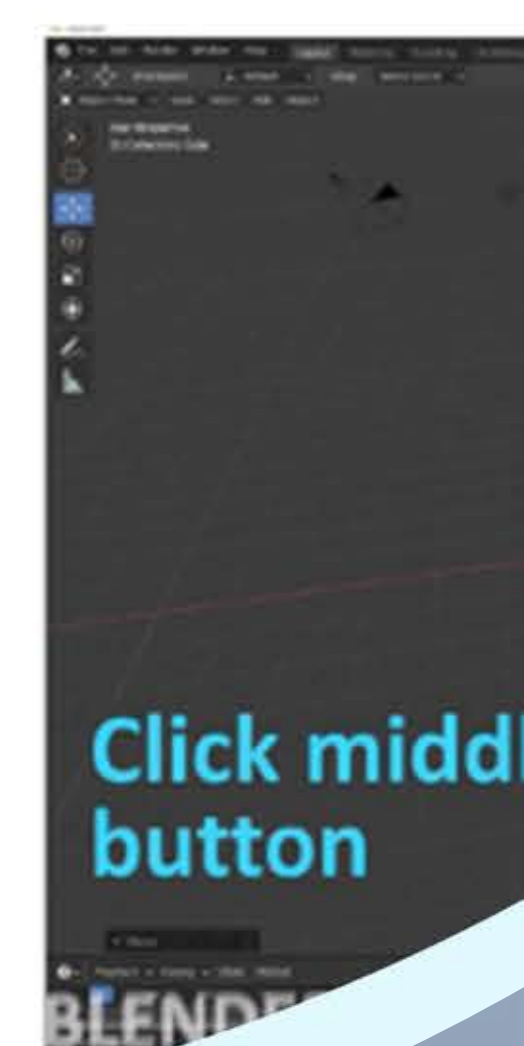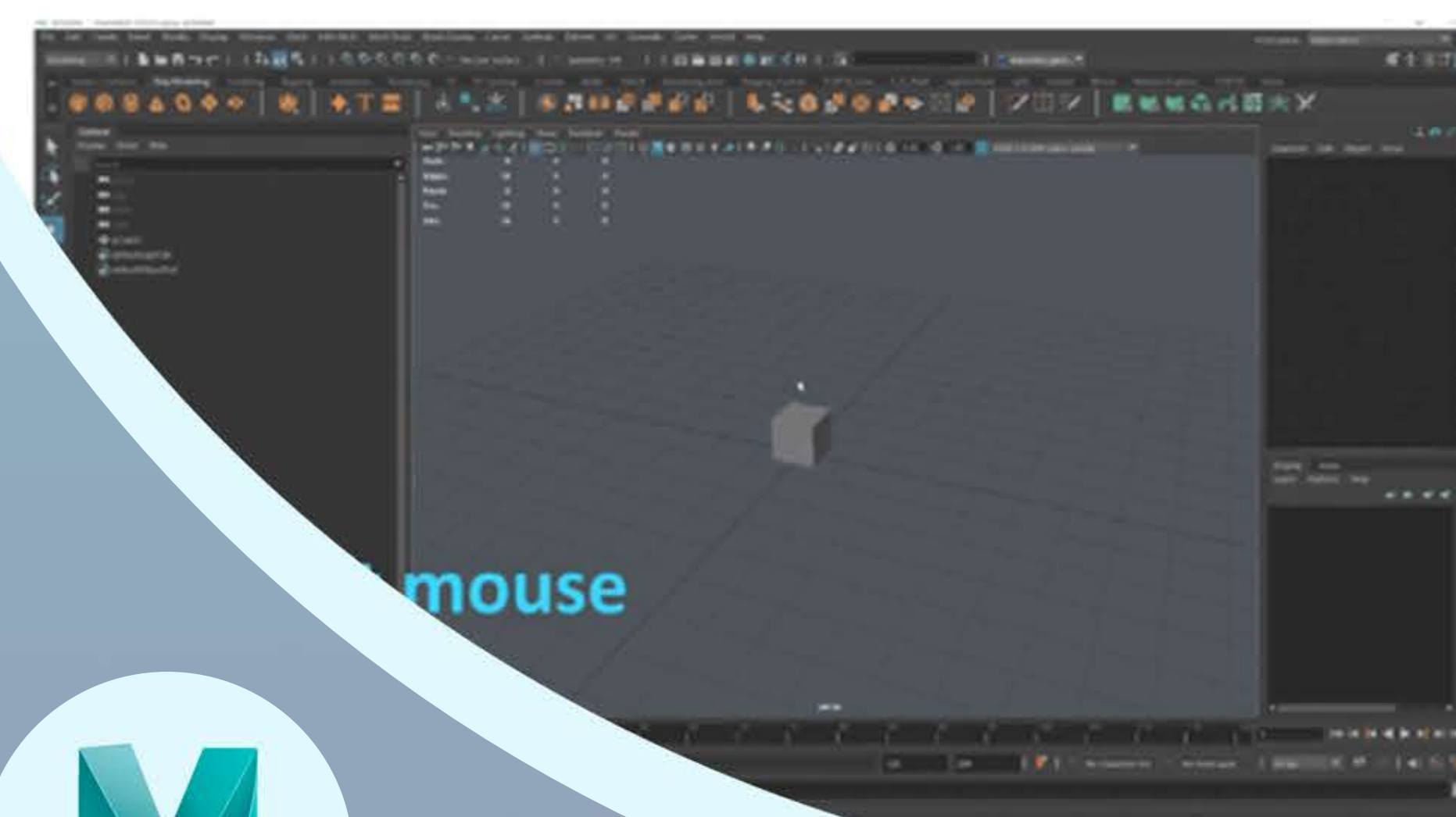
1  García Betegón. Mercedes, Serrano Perandones. Eva, Gayo Santacecilia. Francisco Javier "Cross-cutting methodologies in learning 3D modeling", Communication presented at ICOMTA'2022 Conferencia Internacional de Comunicación y Tecnologías Aplicadas 2022, Bogotá, Colombia, Septiembre 2022