

# Using Legal Visualization to Teach Law to Business and Technology Students

Sora Lee-Remond<sup>1,4\*</sup>, David Rasandratana<sup>2,5</sup>, Iglia Kirilov<sup>3,4</sup>

<sup>1</sup>Industrial Design, Professor, ESTA Belfort, Belfort, France

<sup>2</sup>Law, Professor, ESTA Belfort, Belfort, France

<sup>3</sup>Marketing and Innovation, Professor, ESTA Belfort, Belfort, France

<sup>4</sup>ERCOS-ELLIADD Laboratory (E.A. 4661), Montbéliard, France

<sup>5</sup>Centre de Recherches Juridiques de l'Université de Franche-Comté (CRJFC) (EA 3225), Besançon, France

---

## Abstract

**Background** Combined business and technology competence strongly appeals to companies operating in rapidly changing business environments. Schools tend to mix technology and business curricula to respond to the market requirements and claim hybrid higher education recognition. Within the business and technology curricula, the discipline of law is fundamental as it sets the regulatory operating frame. However, teaching law to business and technology students is becoming an even greater challenge. Based on this insight, a visualization approach to teach law as part of legal design is considered in this study.

**Methods** Two stages of qualitative methods have been deployed. First, semi-structured interviews with the law instructors were conducted at one of the first French business and technology schools. Second, a user-centered approach was applied to design a law case deployed with a class of students to relay the insights gathered from the law instructors. Observation and sentence-completion projective techniques were used to assess the students' perceptions at the second stage.

**Results** The findings demonstrated a noticeable reduction in learning barriers among students in relation to the law course content following the implementation of visualization. Moreover, the incorporation of a legal visualization of an authentic court decision led to heightened levels of engagement and increased class participation, facilitated by dynamic interactivity.

**Conclusions** Within the context of law courses in business schools, a key objective is to cultivate students' "legal thinking skills". The user-friendly design presents an innovative approach to supporting legal courses within the business and technology school environment. We suggest that incorporating legal visualization as a teaching tool for law at business and technology schools could be valuable.

**Keywords** Law Education at Business and Technology School, Legal Visualization, Legal Design

---

This study has no conflict of interest. We thank our participants who voluntarily participated in our study.

\*Corresponding author: Sora Lee-Remond (slremond@esta-goupe.fr)

*Citation:* Lee-Remond, S., Rasandratana, D., & Kirilov, I. (2023). Using Legal Visualization to Teach Law to Business and Technology Students. *Archives of Design Research*, 36(4), 7-27.

<http://dx.doi.org/10.15187/adr.2023.11.36.4.7>

**Received :** May. 24. 2023 ; **Reviewed :** Sep. 12. 2023 ; **Accepted :** Sep. 29. 2023  
**pISSN** 1226-8046 **eISSN** 2288-2987

**Copyright :** This is an Open Access article distributed under the terms of the Creative Commons Attribution Non-Commercial License (<http://creativecommons.org/licenses/by-nc/3.0/>), which permits unrestricted educational and non-commercial use, provided the original work is properly cited.

---

## 1. Introduction

*Ubi societas, ibi jus*. “Where there is society, there is law”. In the field of law and its intricate concepts, the challenges of transmitting knowledge and fostering understanding are profound. Grasping legal principles proves to be a challenge for individuals lacking a legal background. A notable obstacle arises from the use of precise, specialized terminology characterized by performative statements (Laugier, 2005). Interestingly, this legal vocabulary also exists within everyday language, leading to potential difficulties. People might mistakenly assume they comprehend the term and its legal implications, resulting in misinterpretations. Conversely, if a person is unfamiliar with the term, the legal text remains perplexing. An illustrative instance of this comprehension gap emerges when non-legal professionals encounter legal matters, such as street vendor regulations<sup>1)</sup>. Moreover, the global adoption of guidelines advocating for clear and simple language (ISO, 2023) emphasizes the need for clarity. Regardless of the reasons, challenges persist in understanding the law, let alone effectively applying, utilizing, and adhering to it.

Students not enrolled in law school are no different in this regard. While the conventional method of teaching law, known as the “black letter” approach, involving extensive lectures and extensive readings, has been proven ineffective for business students, a variety of alternative methods for delivering course content have been under examination. The necessity to adapt law teaching methods to cater to diverse student audiences has been extensively discussed and firmly established (Richardson et al., 2009). Various educational challenges have been revealed that are discussed in the literature review.

The present study has been conducted at a French school where the curriculum offers a mix of business and technology courses with the aim to deliver a diploma for business engineers. The vocation of business engineering implies that students develop and adhere to both business and technology professional cultures, thus adding another layer of complexity. Although introducing legal design to law schools has been a flamboyant topic for the last decade and well-considered for business students only, by the time of writing the present article, our searches did not reveal studies about using design thinking elements to teach law to future business engineers. Our study focuses on exploring how using a key design thinking element, such as the legal visualization, can support legal courses’ delivery in business and technology schools. The research question which guided the present study is: “How can legal visualization be used in legal courses in business and technology schools?”

We engaged in a qualitative methodology guided by a design process. The aim was to explore and gather insights about the legal teachers’ experiences at the business and technology school. We sensed a new technique of law course delivery for future business engineers, which facilitates understanding, imagination, and problem-solving skills’ development. Finally, we explored the initial perceptions of the students about the new medium. Figure 1 shows the general research process of this study.

1) <https://streetvendor.org/legal-actions/>

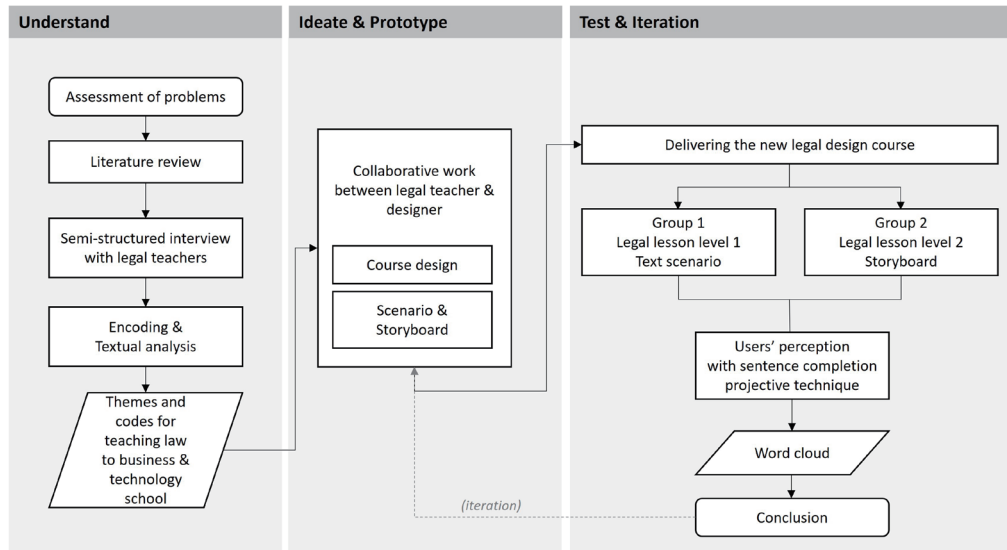


Figure 1 Design process

The article is structured as follows. First, we offer a literature review covering research about teaching law to non-law students (2.1), the difficulties in interdisciplinary curricula (2.2), design thinking for legal education (2.3), visualization and user experience (2.4). The next section lays out the design process we followed which is understanding with semi-structured interviews and ideating legal visualization. The students' perception of the designed storyboard is presented in the results section. In the final section, we provide a discussion and a concise conclusion.

Regarding the legal design approach, intuitively and graphically representing the law is reminiscent of legal design. However, within legal design, sub-distinctions have been made and we have chosen to base our approach on legal visualization. Although not generalizable, our findings indicate that legal visualization enhances students' engagement. This study highlights the transformative potential of integrating legal visualization into pedagogical practice, serving the purpose of lowering students' learning barriers at business and technology schools.

## 2. Literature review

### 2. 1. Teaching law to non-lawyers

In business schools, contractual and commercial law are part of the curricula, and in design education students are meant to learn to handle intellectual property (Kim & Jang, 2023). However, as pointed out by Rossi and Palmirani (2020), "Users' interpretation of legal document does not correspond to the rhetoric activity of legal professionals." In other words, there is a difference in perception and activity between jurists trained in the legal sciences and the 'users of the law'. The users of law need to follow or submit to the legal regulations without having professional legal skills. From the point of view of Atias (2015), "The teaching

of law is simply the learning of a particular way which is the legal way of asking questions. Law is a way of questioning reality, which is complex and delicate, simply because the lawyers know that there are always several points of view.” It’s important, therefore, that users who aren’t initiated into law and legal sciences, develop such awareness (Rouvière, 2021). Nevertheless, handling various points of views and the related methods aren’t the main objective pursued in business & technology schools. Instead, the objective is to educate students who will be tasked with assuming responsibilities, ensuring they possess an understanding of the legal ramifications and the economic as well as strategic decisions they will need to navigate within the realm of business (Do Carmo Silva et al., 2018). However, explorations of teaching law to non-lawyers showed the limit of the traditional pedagogical education method (Morris, 2007).

In fact, the traditional way of teaching law in France is based on introducing legal texts under the form of Codes (Pimont, 2019). Among the popular law teaching methods are the traditional way, involving many reading and lecturing, and case analysis; the context-sensitive method, emphasizing the operating environment; the mixed method, which relies on short lecturing, and more focus on group discussions (Endeshaw, 2002). However, researchers suggested that content-intensive law teaching is not relevant anymore as it does not sufficiently relay the practical problems, solutions, and consequences business students will face in their careers (Batty, 2013). The role of law instructors was also questioned in business schools, and researchers recommended a higher level of context and practicality orientation in the teaching methods (Endeshaw, 2002). Relying on visual and interactive teaching means promotes non-lawyer students’ understanding and engagement of legal practices (Spanjaard et al., 2022).

For non-law students, learning the discipline of law has been reported by researchers to be perceived as highly challenging and unexciting (Allen, 2007; Endeshaw, 2002; Khan, 2021; Razak & Azmi, 2018).

Delivering the law courses to non-law students in a different way than to law students has been discussed and established since the beginning of the 21st century (Endeshaw, 2002; Richardson et al., 2009).

A more recent attempt to respond to the challenge of improving the delivery of law courses to non-law students is e-learning which includes short lecturing, library-based research, group discussions and case analysis (Razak & Azmi, 2018). Additionally, the Issues-Rules-Application-Conclusion (IRAC) and Issue-Law-Application-Conclusion (ILAC) teaching methodologies were evoked as appropriate and/or innovative course content delivery for business students (Khan, 2021; Richardson et al., 2009). The ILAC technique, delivered online and involving a practicing lawyer to share real experience, was reported to generate interest and attention, be enjoyable, reduce fear of learning law, and bring problem-solving skills (Khan, 2021). Methods other than the classic “black-letter” one have been sensed as lowering learning barriers, enhancing engagement and class participation, as well as instigating dynamic interactivity (Endeshaw, 2002; Razak & Azmi, 2018).

Course content delivery methods and the role of the lecturer aren’t the only issues in teaching law to non-law students. Each discipline has its convention or culture, implying the development of a specific attitude, way of thinking, behaving, and communicating (Allen, 2007; Corrales Compagnucci et al., 2021). Students who follow a specific discipline, in the perspective to learn how to practice it as a profession in the future, may need to overcome

various other impediments related to their personality type and the capacity to engage with other disciplines' conventions (Allen, 2007). The capacity of non-law students to apply problem-solving techniques for law-students is equally different (Richardson et al., 2009).

## **2. 2. Challenge for interdisciplinary cursus**

Ji (2019) highlighted that the legal design must be co-created in cross disciplinary way. Corrales Compagnucci et al. (2021) argued that interdisciplinary communication and cooperation, more specifically, involving lawyers and designers, is arduous as each profession's expert relies on their specific language, worldview, values, to express their ideas. In social psychology and neuroscience, for instance, interpretations of the law culture point to the need of advanced precision, attention to detail, systematic sequential reasoning, and detachment, while design culture needs empathy, intuition and non-linear thinking (Corrales Compagnucci et al., 2021). Such discrepant practices are held responsible for collaboration difficulties, change management issues, and various cross-functional misunderstandings (Bloor & Dawson, 1994; Corrales Compagnucci et al., 2021; Pieterse et al., 2012).

Critical legal aspects that need to be reflected in business education belong to both the macro and micro levels in a way that addressing exclusively the tactics with legal topics is not enough (Petty, 2000). Manna et al. (2022) revealed the effectiveness of using design thinking as a teaching method in business curricula to enhance the needed critical thinking skills of students for combining visionary with micro-level developments. However, business and legal professional cultures are distinct and combining them requires special attention from educators to support students' understanding and learning. In business education standards, visualization practices can additionally support targeted content engagement leading to enhanced actual learning (Bacon & Stewart, 2022). It is to be noted that information about how visualization could support law courses in business and technology schools was not identified by the time of writing the article.

## **2. 3. Design thinking for legal education**

At the end of the 90s, the French Constitutional Council consecrated the requirement of accessibility and intelligibility of the law (Benezech, 2020). In line with these principles, legal articles should be composed in a manner that is readily comprehensible to individuals tasked with reading, adhering to, or implementing legal regulations. Nonetheless, grasping the intricacies of the law can be challenging due to the technical and highly specialized use of language. Niinikoski and Toivonen (2021) highlighted the increasing need for more understandable and easier legal work products in education, with such concepts as "human-centric design", "co-creation" and "empathy skills".

As law requires efforts to "translate" it comprehensively to users, clear and understandable communication has been pointed as central. This led to the development of legal design and its introduction into law schools (Corrales Compagnucci et al., 2021; Hagan, 2020; Ji, 2019). Design thinking pedagogy has been found to support the development of new essential skills of law students, thus preparing them to embrace the profession of lawyers in a successful way in the future (Hews et al., 2023).

Legal design appears to be a possible solution to the difficulties of understanding law and legal information. As previously discussed, the requirements and needs for understanding legal information differ for non-lawyers. The street vendor project illustrates even further the power of visual communication for understanding law application and insuring the feeling of accessibility. Hagan (2020) recommended legal design for cross-disciplinary innovation. Visual elements are not meant to completely replace text in legal documents, rather, illustrations, such as diagrams, timelines, icons, and comics, complement text (Rossi & Palmirani, 2020).

A playful teaching method in legal design called ludopedagogy provides more interaction (Brown et al., 2020). Comicboarding is one of the ludopedagogy tools facilitating participation (Hiniker et al., 2017; Moraveji et al., 2007). Therefore, such design tools as storyboards are potential facilitators of the understanding of legal texts which are perceived difficult to learn and understand by non-lawyer students.

#### **2. 4. Visualization and user experience**

The role of any tangible design object is to visually ensure the understanding of the function (Norman, 2013). Within the realm of legal design, visualization serves as a means to efficiently convey legal information to end users, enabling them to gain a clear and comprehensible understanding of the subject matter (Niinikoski & Toivonen, 2021). Visualization delivered in a simple way diminishes mental stress, increases acceptability, and encourages ease of use (Zhang & Li, 2004).

As Hassenzahl and Tractinsky (2006) describe, user experience (UX) focuses on such hedonic aspects of use as fun and pleasure, which represent positive emotions. It's worth noting that the visual aspect holds significant importance in supporting to convey emotions (Kahn, 2017). More specifically, Hagan and Özenç (2020) advised storytelling and a user-friendly interface as appropriate means for teaching law. Additionally, storytelling has been found to represent a major tool for engaging the students' participation (Robson & Mills, 2022). Effectively, storytelling procures more interaction and stimulates the students' engagement (Spanjaard et al., 2022). Storytelling has been already exemplified in marketing education and accounting courses (Spanjaard et al., 2022).

The transmission of information to the brain is mainly visual (George Eid, 2022). Storyboard as the visual means of transmitting information while teaching was found to associate to such benefits as facilitating attention and enhancing understanding (Asyrifah et al., 2021; Huang, 2019; Wan Husain et al., 2020). The use of storyboard immersion can provide a user-friendly experience, reducing apprehension about the law. This is achieved through the enjoyable and interactive elements that stimulate student engagement (Manna et al., 2022). UX methodologies such as mapping the user's journey or employing storytelling techniques have the capacity to foster greater empathy and interactivity (Micheaux & Bosio, 2019). Using interactive support in the education domain motivates knowledge acquisition, learning and interaction, engagement and enjoyment (Florenthal, 2019; Moraveji et al., 2007). Thus, a storytelling method with visualized storyboard can help the students to understand an unfamiliar concept that they aren't used to, like a legal text, and increase motivation.

---

### 3. Design process

As posited by Jones (1992), design transcends the realm of mere sketching; it represents a hybrid endeavor with a distinct focus on generating a substantial impact on society or users. In this context, we employ a design process to enhance business and technology students' interest and empathy, thereby motivating them to cultivate independent critical thinking skills, gain a holistic understanding of the legislative system, and develop the ability to tackle legal challenges. Consequently, we propose a novel approach to legal education through interdisciplinary collaboration and the co-creation of a storyboard. To achieve this, we conducted semi-structured interviews with three law educators at a business and technology school in France (3.1 Understanding). The subsequent phase involves collaborative work between the legal teacher and the designer to create a storyboard based on an actual court case (3.2 Ideation).

#### 3. 1. Understanding

##### 3. 1. 1. Semi-structured interviews

As previous research in the area indicating how to introduce law to students with business and technology backgrounds remains scarce, a qualitative method allowing an explorative approach was selected (Creswell & Creswell, 2018).

We conducted semi-structured interviews with three law educators at the concerned business & technology school, thus covering all law instructors teaching at this school, except one, who refused to take part in the study. Our interview protocol was pre-tested with the law faculty leader and minor corrections have been introduced to the initial version. The semi-structured interviews were conducted on Zoom and recorded with the previously provided written consent by the participants.

The law instructors at the business and technology school have previously reported difficulties in courses such as the following students' complaints: *"There's so much to read"*, *"I can't understand it"*, *"Law's hard"*. These are just some of the reactions gathered during classes prior to the present study, which are an indication about the difficulty and fear felt by the students during law classes. Faced with the text, many students are initially put off or discouraged after trying to grasp the legal situation.

##### 3. 1. 2. Key themes and interpretation

The data analysis process for the semi-structured interviews involved listening to the recordings, transcribing them, reading the collected data, and coding. The clarity of codes' definition and mutual exclusiveness rules are essential when coding semi-structured interviews (Campbell et al., 2013). The codes' definitions, exemplified by some of the collected data, are available in Appendix.

As the initial main topics were already delivered through the research question and the interview protocol, we proceeded with coding, as recommended for thematic analysis (Kuckartz, 2014). In compliance with Braun & Clarke (2006), an initial coding session took place, held by the researcher who executed the interviews, and covered the whole data. The initial coding was shared, then, with the rest of the team. Each one of the research team members reviewed and coded the data separately. Then, a common coding session took



place to ensure agreement about the codes, completeness of interpretation and mutual exclusiveness. Slight divergences were eliminated through multiple discussions among the three researchers. Then, we searched for emerging themes across the coded data, considering first the entire data set and then across the data pertaining to each question. The themes were reviewed, determined, and named by the three researchers together in several consecutive sessions. Additionally, and with the aim to help our visual representation of the gathered data, we counted the codes' frequencies within the defined themes, acknowledging that the frequencies have no impact on the interpretation and the final analysis we've produced.

We used Burch et al.'s (2016) interdisciplinary conceptual framework to develop the interview protocol and understand how the law educators' teaching practices integrate a business and technology setting. The framework has been already deployed in other interdisciplinary studies such as Cejnar & Hayes (2020) bridging industry and community projects for creating learning. Moodley and Mchunu (2019) also found an alignment with Burch et al.'s (2016) framework and emphasized the significance of the double-sided approach, from both students and educators, to level the interdisciplinary academic programs.

Each one of the interviewed law instructors discussed their teaching approach, following the discussion topics. The topics related to (a) differentiating content in respect to the audience, (b) communicating meaning, (c) connecting to experience, (d) students' collaboration, and (e) ensuring learning is applied outside the classroom. The coding of the participants' interviews texts translated into five themes presented in Table 1. The law instructors emphasized the differences among students' audiences and unambiguously highlighted the need to adapt the content and the delivery methods to the public. The instructors expressed the perception that various techniques shape their teaching methods while trying to adapt to their audiences, which on the other hand differently impacted learning. Examples from real cases, anecdotes as part of some storytelling techniques, as well as gamification and collaborative exercises were perceived by the instructors as more successful. The instructors shared the feeling that students learn better when they are immersed into the situation and connected to the context with examples, and when the participation barriers are removed. Although the instructors expressed the detection of difficulty and fear of law among their students, they also highlighted that enhancing the feeling of utility and accessibility was essential to foster understanding.

The interviews revealed a shared feeling among the law professors of the level of perceived difficulty of the discipline as being one of the main barriers. One of the participants shared: *"Probably for students, for many in any case, it remains abstract, so it's often more complicated to train in law. There are certainly simpler subjects, but in law I think it's often complicated, it can be complicated for a public of students."*

Delivering the course content in an accessible way also appeared to be a common consideration among the instructors. Another participant mentioned the use of PowerPoint slides as a successful means to deliver the course:

*"In fact, when I had used the method where I had visuals, so, all the course materials are on PowerPoint displayed, and at a certain point I give them the activity of creating their own material".*

Additionally, the feeling of utility of the taught matter was also highlighted as a significant



driver of the motivation to learn. The lack of understanding the utility by the students was clearly evoked as a learning barrier:

*“They (the students) tell me ‘We don’t do that, it’s not up to us, we’d be accompanied by lawyers, I don’t see why it’s up to me to understand law, why it’s up to me to see contracts, why it’s up to me to understand, well, it’s not up to me to do that’.*

Although the law instructors’ approaches vary, common key points about what works and what does not work clearly emerged.

Table 1 Main themes & codes

Theme	Code	Count
Application	Engagement	7
	Interaction	5
Learning	Immersion	13
	Case (examples)	12
	Audience differentiation	6
	Participation	5
	Continuity	2
	Support	1
	Teaching approach	Storytelling
Playful teaching		4
Collaboration		3
Visual elements		3
Motivation		2
Legal text		2
Personalization		2
Co-creation		2
Theory		2
Problem-solving		1
Understanding	Difficulty	8
	Feeling of utility	7
	Feeling of accessibility	5
	Fear of law	3
User character	Enterprise experience	3
	Tolerance	1

The interviews revealed a strong emphasis on the willingness to enact students’ immersion into the taught matter. Using real cases and examples from the practical experiences of the instructors, delivered through storytelling, sometimes with anecdotal, surprising and fun elements, was considered as the best means to support engagement:

*“It’s invariably anecdotes that I bring to them. As an illustration of, as an illustration... of the real example, of the theory that I explained just before, because otherwise I can see that they have a lot of trouble understanding the point. The point of company law, I mean. They don’t understand the point of writing a management report, because for them they’re pretty far removed from these concerns, and it’s only through very concrete examples that I can show them the point”.*

The experience and insights the legal professors shared here are in line with the ideas we found in our literature review about the relevancy of connecting to the context as part of the teaching methods (Allen, 2007; Endeshaw, 2002; Khan, 2021; Razak & Azmi, 2018).

Additionally, these insights corroborate Allen's (2007) emphasis of the students' character in terms of intellectual curiosity and personal willingness and capacity to span over a narrow learning focus of their primary discipline. Our analysis, however, revealed an additional perspective in the students' character that could be further investigated for the specific setting of business and technology schools, which relates to tolerance.

Interestingly, lowering the fear of law through interactive collaborative settings, co-creation, and introduction of visual elements appeared as some of the useful teaching techniques, although far from being traditional and widely used in teaching law.

The interviews showed that using legal text only was a limiting technique. The students' capacity to enter a legal interpretation with a relevant level of projection through reading a legal text is considered narrowed and hindering the understanding of the scope of a situation and the multitude of legal aspects involved. A concrete, tangible and material visualization of the situation, therefore, seemed helpful to remove the limiting impediments. The idea of using a visualization design approach as the means to exemplify a real case through a storyboarding technique seemed plausible. Therefore, two versions of the course were designed with two different levels of visualization and scenario-building with the top keywords (playful, tangible, immersive storytelling) in mind.

### **3. 2. Ideation: legal visualization**

The students were offered a real law-case storyboard, specifically designed by one of the researchers, using a storytelling approach to foster students' understanding and engagement (Krom & Williams, 2011; Rohm et al., 2018; Spanjaard et al., 2022). The storyboard reflected the need to bring focus to legal details and systematic sequential reasoning while combining these with empathy and intuition. These elements correspond to the law and the design professional cultures respectively, as explained by Corrales Compagnucci et al. (2021). The storyboard brought the different professional cultural elements together.

The storyboard was created with multiple back-and-forth collaborations (Figure 2). It started with translation of a court-case to a scenario, then to a rough sketch. The selected course topic was "Liability for defective products", as a component of "product safety", one of the main categories of law teaching at marketing curricula (Petty, 2000). With several iterative sessions of sketching and adjusting, we finalized the storyboard by incorporating questions on content.

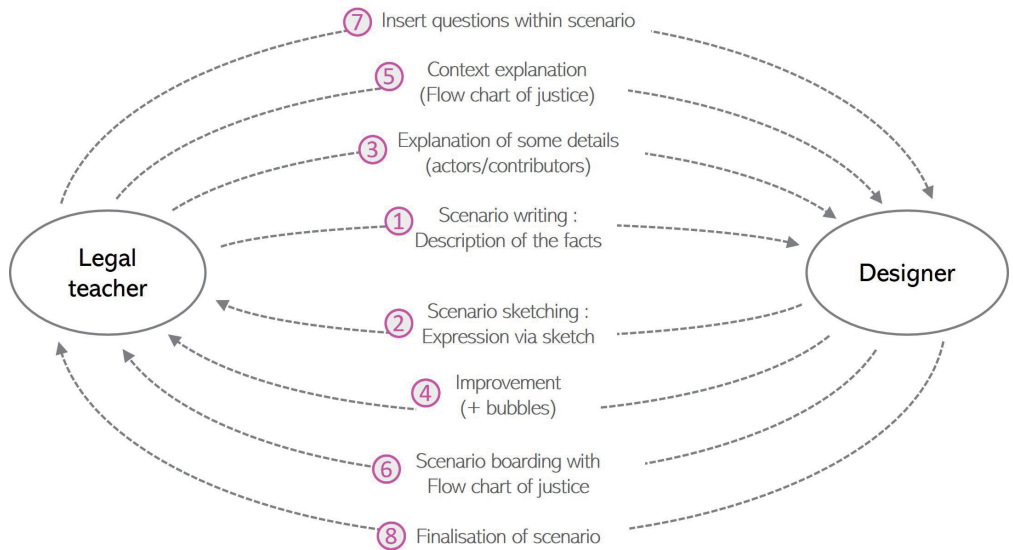


Figure 2 Storyboard creation process

The scenario was developed based on a real-case decision of the Court of Cassation, based on article 1245 of the French Civil Code. The rough sketch permitted the law teacher to grasp the difficulty for non-lawyers to conceptualize the legal text. Furthermore, it played a crucial role in conveying and demonstrating the degree of understanding shared between the law teacher and the designer. (Figure 3).



Figure 3 Examples of rough sketches

This process transformed a court case which is fuzzy and abstract for non-lawyers into a story with illustrations and diagrams. This final storyboard was presented with customized PowerPoint animation in a way to allow the student to grasp the general procedural aspects. Examples of the storyboard can be found in Figure 4.

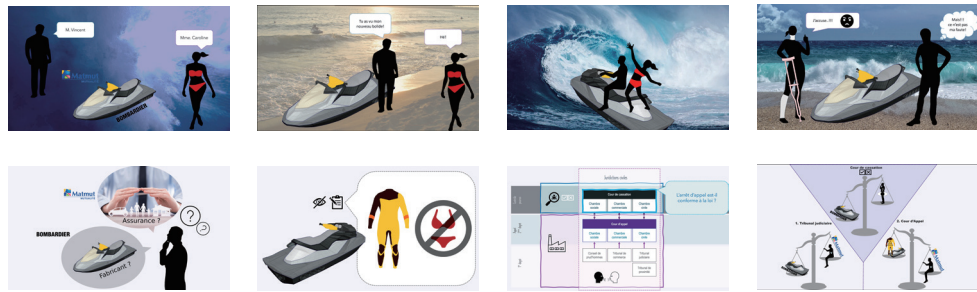


Figure 4 Examples of the storyboard

During the visualization, we played with “*cliché*” images to attract attention while respecting the fact. The red bikini contrasts with the yellow combi, both drawn in representation using symbolic power (Bourdieu, 1991).

We selected a second-year students’ promotion where the students have already had initial law classes, and who already follow business and technology school education. The class was composed of 40 students. The topic was delivered to 2 groups of students during a 1h30 session. Each group received a version with a different level of visual incorporation. The students were aged 19-20 (22 students for group 1, 18 students for group 2).

Data were collected through observation and instant students’ perception feedback through sentence-completion type projective technique. Sentence completion involves blending a projective technique with a questionnaire. In this approach, participants are given sentence beginnings and are prompted to finish them in a manner that holds personal significance to them (Kujala et al., 2014). Sentence completion has such advantages as useful qualitative user feedback, richness of the information collected, and understanding of a user’s thoughts and feelings, experiences and motives (Doherty & Nelson, 2010; Hoyer et al., 2007; Kujala et al., 2014; Pearce & Lee, 2009). Additionally, sentence completion can support enjoyment and engagement, as well as decrease the difficulty and subjectivity of the interpretation of complex data (Heyward, 2020). For the sentence-completion projective technique, the students received hard copies and anonymously filled them in.

The two sessions were taught by the law professor and observed by one of the researchers, the designer, for their reactions and interactions. We preferred to note the behavior discretely rather than filming the students, which could change their behavior. The results are displayed in the word cloud diagrams in the next section.

#### 4. Students’ perception: Results

A scenario-based text was submitted to the first group (G1) of students. A visually enhanced version of the course designed as a storyboard was delivered to the second group (G2) of students. The measurement of the learning outcomes remains difficult (Spanjaard et al., 2022). As user experience is personal, holistic and complex, to explore the students’ real perceptions about the course, the sentence completion method was applied. After the course,

the students provided their perception through the sentence completion technique and a text analysis was performed with IRaMuTeQ which is multidimensional text-analyzing software (Chaves et al., 2017). The results of the software analysis provided an objective visualization of the students' reflection of the course delivery (Figure 5).

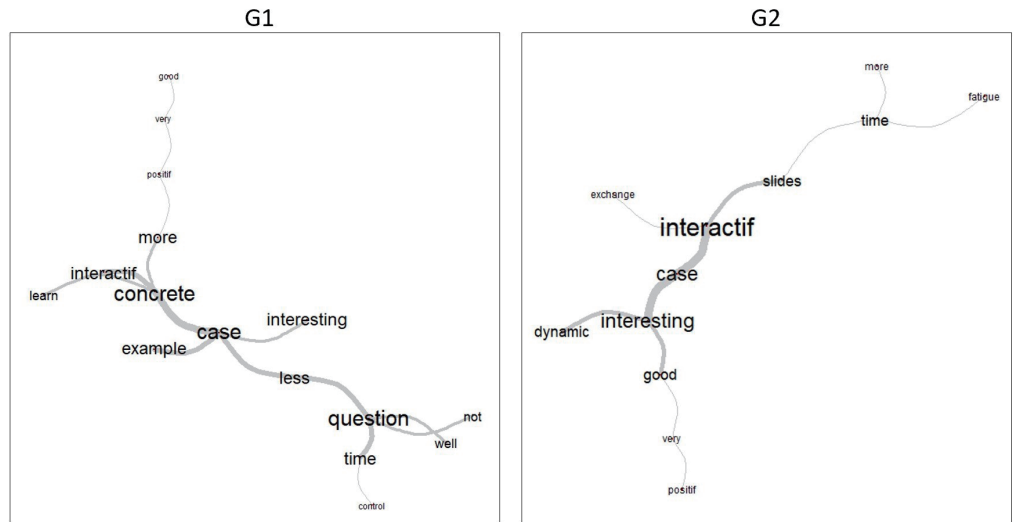


Figure 5 Similarity analysis (IRaMuTeQ)

In fact, even though G1 didn't have visual support, they had a real case story. G1 results indicated the generation of a higher level of interest and pointed to the fact that a level of abstraction has been removed. The former result relates to an enhanced engagement, while the latter favors the feeling of utility (Figure 7). The leading element for G2 is related to interactivity. Just like G1 students (Figure 6), G2 students also pointed to an increase in interest, as well as to the fact that a case was the baseline of the course (Figure 7).

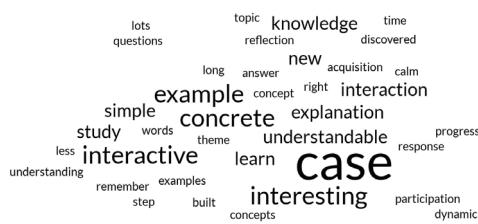


Figure 6 Positive impression G1



Figure 7 Positive impression G2

However, G2 students emphasized the interactive side of the course delivery the most. G2 students also brought a strongly discriminating new insight into the storyboard course delivery, which was about dynamism, vividness and enjoyment (“interactive”, “more lively”, and “playful”). Overall, the newly designed course around visualization gave more engagement with interactive and dynamic perception, as well as a higher possibility for immersion into the taught matter, and a sensible feeling of higher content accessibility.

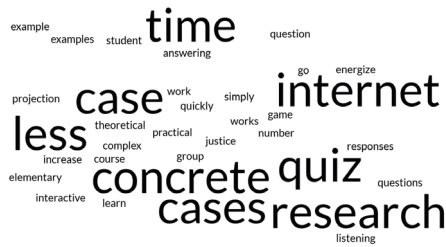


Figure 8 Improvement suggestion G1

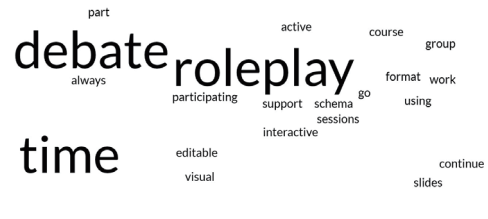


Figure 9 Improvement suggestion G2

In the improvement suggestions cluster of the sentence completion technique, the divergence between G1 and G2 responses is sounder. G1 students pointed to the inclusion of more cases, even less abstraction and complexity, and to the introduction of a playful quiz to be held during the course to enhance focus on some essential points and learning (Figure 8). G2 responses showed a willingness to deepen immersion into the taught matter through dramatization and debates (Figure 9). Participation and group work were evoked by both groups, but to a lower extent.

Designing legal lessons for business and technology students considering users' characteristics is a real challenge requiring more experimental tests and user-centered design support. Nevertheless, the results of the study indicate an interest in developing legal visualization support for law courses generally perceived as difficult.

---

## 5. Discussion

The present study aimed at exploring “How can legal visualization be used in legal courses in business and technology schools?”. In line with Francescucci and Rohani (2019) the semi-structured interviews with the law teachers highlighted the importance of user-centered teaching. As Margaret Hagan stated, “Design helps us to present information in clearer schematics and also in more engaging stories”<sup>2)</sup>. Teaching law in business and technology schools calls for a specific approach allowing the students to attend the course content and learn at their best.

The search for user experience design for the law course ended up with the development of a storyboard reflecting specific information in a way to comprehensively respond to the requirements of various professional cultures. Translating a real court case into a storyboard with the storytelling of the legal professor procured an engaging and immersive interface, and leveraged targeted content engagement which increased the opportunity to achieve actual learning.

The course content was designed so that it is less intensive, but sufficiently relevant to the practical problems for the career of future business engineers. The role of the law professor was also revised to meet further context and practical orientation through storytelling. Within this setting, the results of the study support the findings of Spanjaard et al. (2022)

2) <https://lawbydesign.co/>

about the significance of the visual and interactive means for making the law course content more accessible and engaging for non-lawyer students. From a practical perspective, the findings from the study can support legal course design in an innovative way for business and technology schools including legal visualization.

---

## 6. Conclusion & limitations

The legal visualization elicited a heightened degree of student engagement, thereby fostering enhanced perception and active involvement in the context of the legal instruction. A fundamental aspiration of integrating legal courses within business and technology education is to foster student enthusiasm and facilitate a more accessible understanding of legal intricacies.

A major limitation of the study consists in the fact that only one French business and technology school was involved. Additionally, only one class of students was exposed to the newly designed course. Moreover, the two groups of students had the course delivered at different moments, which may potentially introduce additional factors influencing the perceptions.

Finally, the study followed a qualitative design with the researchers being the main tools. All these elements contribute to the lack of a possibility to generalize the results.

We propose a two-part direction for future research. We suggest conducting experiments in collaboration with multiple business and technology schools to gain a comprehensive understanding. Exploring the specific student skills that are enhanced through visualizing a law course could yield valuable insights.

Furthermore, there is potential to develop a practical framework that could be adopted by other educational institutions. Following this, the framework could undergo validation using quantitative methods. This validation will enable the broader application and potential generalizability of the results.

While our study design did not encompass precise quantification of concrete learning outcomes, it did reveal noticeable indications of a positive perceptual learning experience. It is noteworthy to underscore the pivotal role played by the perceived experiential gratification in shaping users' disposition towards embracing intricate subject matter. We suggest that incorporating legal visualization as a teaching tool for law at business and technology schools could be valuable.



Appendix

• Code definitions and examples

Code	Definition	Example
Engagement	Indication of interest, concentration/attention, and/or passion about the taught topic, idea, or communication mean.	"...from this group of students, I have very concrete questions, for instance, regarding the real life in the companies: what exactly are the rights of the decision-makers in certain situations, etc. ..." "I manage to stimulate their interest..."
Interaction	Spontaneous verbal reaction, question, comment, showing willingness to debate or discuss.	"...they (the students) do it in a much more spontaneous way, more easily, more freely."
Immersion	A teaching method which allows students to feel they are part of the environment they are studying.	"It's about immersing them in their own experience and showing them that what we're doing, we're not doing for the sake of doing it. They're not interested in other people's situations, it's generation Z, who only see the world through their students' eyes, and so to say to them: 'Here you are, you're in this situation, today you're going to negotiate, the lawyer has the Covid, well what do we do? And it works, in my opinion it works, I had feedback afterwards, but I have students who are interested, who do their work well, it's well done. So, there you have it."
Case	An example of a real legal situation with an outcome related to the topic to teach or study.	"I manage to interest them, and I can see that they're particularly interested in the very concrete examples of small businesses that they can very easily find around the corner."
Audience differentiation	Indication of adapting the instructors' methods, vocabulary, teaching media, etc., to each category of learners.	"So, I told the M2 students, well, as I'd seen that it was more or less correct, I created groups of four students, and I got them to work on an article of law."
Participation	Answering a question asked by the instructor in class.	"...there is less need to encourage students to participate"
Continuity	Prolongment and/or extending of the learning relationship in the time.	"I keep in touch with those who need it because sometimes they come to see me at the end of the course, they have a micro-business, and in that case, I tell them, that, I reply, that with pleasure, I reply to them if they send me an email."
Support	Medium to transfer teaching information.	"... the first thing is that if we ignore any reforms in company law, I provide them with ... all the course materials, they have them, i.e. they have all my course in writing"
Storytelling	A teaching method which displays a specific law concept through telling a story	"...an example of something that really happened to someone they might pass in the street, in fact."
Playful teaching	A teaching method which allows for gamifications or other fun-procuring tools.	"We had an oral evaluation with a game. So, the team that did it, they presented a KHOUT at the end to confirm what they'd said, and it was brilliant. And that was it. So, it was very rewarding for them and for me."
Collaboration	Delivering a task or other result, when relying on the shared effort of a group.	"And then when the Brussels and Rome regulations came up, for example, they made mind maps. One was a whole mind map for the first and then for the second, a group article. It was much more interesting."
Visual elements	Such illustrations as graphs and diagrams, timelines, comics, pictures, sketches.	"The student has to learn from the teacher, change this approach by, perhaps, using images, photos, concrete situations, etc. I think that this brings the student closer to the teacher."
Motivation	A positive driving force triggering any kind of learning.	"So, it's the work-study students who are going to apply, for example, an agreement. They've gone back to the work-study agreements abroad to look at what we've worked on in terms of general terms and conditions of sale, so what they've bought, for example iPhones, they've looked at a little bit. I gave them examples of general terms and conditions of sale, with an international contract. So they took a look at the approach and then thought about their own business. And then... So, it was great because they realized."

Legal text	A text written with the specifics of the terminology, language and culture of the legal codes and the legal profession.	"A bit negative because they didn't like the reading."
Personalization	A technique used to adapt teaching to some personal requirements or use.	"So, it's always putting them in their own situation."
Co-creation	A technique of preparing legal learning materials in involving the students as the users.	"So, it doesn't work in every class, because someone has to be the lawyer or the client, but when it does work, I find it quite interesting, because the other students are paying attention."
Theory	"Black letter" teaching method, involving reference to reading foundational legal documents, such as codes, court decisions, actual law cases, and so forth.	"I start by explaining the theory, i.e. what the law is and what the legislator intends, and then I always give examples."
Problem-solving	Imagining or identifying the alternatives to solve a legal issue.	"And... Another method that I also use here is mainly for the introduction to intellectual property, in which we take a practical case that was published by the INPI, in which there are two companies that are in conflict over the registration of a trademark. Half of the class works on the company that has to register the trademark and the other half works on the company that is attacking the first, and there are groups of 5 in which everyone takes a turn to put forward an argument."
Difficulty	The situation of a feeling or idea that the legal material is too complicated and surpasses the actual capacity of the student's understanding, or too much in quantity.	"I think it brings the student closer to the subject, because it's a bit complicated for them, just the vocabulary alone, and at their level of study and with everything they want to do, it's not their thing."
Feeling of utility	The feeling or understanding that a legal information, knowledge, or competence will be used and helpful in the practice of the student's future profession or job as a business engineer.	"And, so, it's to say to them, there you go, it's in case you find yourself in this situation, try to put them in a situation is that in fact when they are confronted with this situation to say here you are intervening in an exchange, for example, you are going to be business engineers, if you find yourself negotiating a contract, for example, and you don't have a legal expert, and you're on the spot, it would be completely inappropriate to say "no, I can't negotiate today because I don't know how to write a contract."
Feeling of accessibility	The feeling, idea, or impression that the student will be able to understand or learn the legal topic that has been taught.	"his way of reacting and this ease of presence on the part of the professor, which means that the information is passed on more quickly and more effectively"
Fear of law	A negative 'a priori' about confronting the legal material and learning where the threat of failure to learn and master the material prevails.	"...And, above all, it means facing failure and misunderstanding."
Enterprise experience	Cases, anecdotes, events, facts, or other types of information shared with the student or lived by the student regarding any facet of the taught legal material.	"What works... what will work is to get them into very practical situations."
Tolerance	The students' ability, willingness, predisposition, or agreement to accept information or behavior of peers without signaling a disagreement, dislike, or making fun, laughing, and so forth.	"I have the impression that even among the students there's a bit less judgement when there's participation from one or the other."

## References

1. Allen, V. (2007). A critical reflection on the methodology of teaching law to non-law students [Article]. *Web Journal of Current Legal Issues*, (4). Kingston University Research Repository, London, UK.

2. Asyrifah, L., Lestari, L., & Purwati, O. (2021). Teacher's perception: Teaching reading storyboard for mentally retarded students. *Jurnal Education and Development*, 9(3), 81–85.
3. Atias, C. (2015). Le Droit, entre enseignement et réalité. *Les Cahiers Portalis*, 2(1), 75–90. doi:10.3917/capo.002.0075
4. Bacon, D. R., & Stewart, K. A. (2022). What works best: A systematic review of actual learning in marketing and management education research. *Journal of Marketing Education*, 44(1), 6–24. doi:10.1177/02734753211003934
5. Batty, R. (2013). Well there's your problem – the case for using PBL to teach law to business students. *The Law Teacher*, 47(2), 243–260. doi :10.1080/03069400.2013.790152
6. Benezech, L. (2020). L'exigence d'accessibilité et d'intelligibilité de la loi: Retour sur vingt ans d'existence. *Revue française de droit constitutionnel*, 123(3), 541–563. doi :10.3917/rfdc.123.0541
7. Bloor, G., & Dawson, P. (1994). Understanding professional culture in organizational context. *Organization Studies*, 15(2), 275–295.
8. Bourdieu, P. (1991). *Language and Symbolic Power*. Harvard University Press.
9. Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77–101. doi:10.1191/1478088706qp063oa
10. Brown, B., Buchanan, R., DiSalvo, C., Doordan, D., Lee, K., & Mazé, R. (2020). Introduction. *Design Issues*, 36(3), 1–1. doi:10.1162/desi\_e\_00598
11. Burch, V. C., Lewis, J., Subramaney, U., Katurura, A., Quinot, G., Singh, S., & Dhunpath, R. (2016). Towards a conceptual framework for interdisciplinary teaching and learning dialogues in higher education. *Alternation Journal*, 23(1), 233–264.
12. Campbell, J. L., Quincy, C., Osserman, J., & Pedersen, O. K. (2013). Coding in-depth semistructured interviews: Problems of unitization and intercoder reliability and agreement. *Sociological Methods & Research*, 42(3), 294–320.
13. Cejnar, L., & Hayes, M. J. (2020). Interdisciplinary learning in industry and community projects. *ETH Learning and Teaching Journal*, 2(2), 513–516.
14. Chaves, M. M. N., dos Santos, A. P. R., dos Santosa, N. P., & Larocca, L. M. (2017). Use of the software IRAMUTEQ in qualitative research: An experience report. *Computer Supported Qualitative Research*, 39–48. doi:10.1007/978-3-319-43271-7\_4
15. Corrales Compagnucci, M., Haapio, H., Hagan, M., & Doherty, M. (2021). *Legal design: Integrating business, design and legal thinking with technology*. Cheltenham, UK: Edward Elgar Publishing.
16. Creswell, J. W., & Creswell, J. D. (2018). *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches* (5th edition). Los Angeles, CA: SAGE Publications, Inc.
17. Do Carmo Silva, J.-M., Bouthinon-Dumas, hugues, & Saint-Affrique, D. (2018). Les attentes des entreprises vis-à-vis de la formation juridique des managers non juristes. *La Semaine Juridique*, 13(1162), 35–44.
18. Doherty, S., & Nelson, R. (2010). Using projective techniques to tap into consumers' feelings, perceptions and attitudes . . . getting an honest opinion: Using projective techniques. *International Journal of Consumer Studies*, 34(4), 400–404. doi:10.1111/j.1470-6431.2010.00880.x
19. Endeshaw, A. (2002). Teaching law to business students: An inquiry into curriculum and methodology\*. *The Law Teacher*, 36(1), 24–43. doi:10.1080/03069400.2002.9993095
20. Florenthal, B. (2019). Students' motivation to participate via mobile technology in the classroom: A uses and gratifications approach. *Journal of Marketing Education*, 41(3), 234–253. doi:10.1177/0273475318784105
21. Francescucci, A., & Rohani, L. (2019). Exclusively synchronous online (VIRI) learning: The impact on student performance and engagement outcomes. *Journal of Marketing Education*, 41(1), 60–69. doi:10.1177/0273475318818864
22. George Eid, M. (2022). *Benefits of animated advertisements in today's world*. (Master's thesis). Retrieved from <https://ndu.edu.lb>
23. Hagan, M. (2020). Legal Design as a thing: A theory of change and a set of methods to craft a human-centered legal system. *Design Issues*, 36(3), 3–15. doi:10.1162/desi\_a\_00600

24. Hagan, M., & özenç, F. K. (2020). A design space for legal and systems capability: Interfaces for self-help in complex systems. *Design Issues*, 36(3), 61–81. doi:10.1162/desi\_a\_00604
25. Hassenzahl, M., & Tractinsky, N. (2006). User experience—A research agenda. *Behaviour & Information Technology*, 25(2), 91–97. doi:10.1080/01449290500330331
26. Hews, R., Beligatamulla, G., & McNamara, J. (2023). Creative confidence and thinking skills for lawyers: Making sense of design thinking pedagogy in legal education. *Thinking Skills and Creativity*, 49, 101352. doi:10.1016/j.tsc.2023.101352
27. Heyward, E. (2020). *Obsessed: Building a brand people love from day one*. New York, NY: Portfolio/Penguin.
28. Hiniker, A., Sobel, K., & Lee, B. (2017). Co-designing with preschoolers using fictional inquiry and comicboarding. *Proceedings of the 2017 CHI Conference on Human Factors in Computing Systems*, 5767–5772. doi:10.1145/3025453.3025588
29. Hoyer, W. D., MacInnis, D., & Pieters, R. (2007). *Consumer behavior*. New York, NY: Houghton Mifflin Harcourt.
30. Huang, T. (2019). Effects of visual aids on intermediate Chinese reading comprehension. *Reading in a Foreign Language*, 31(2), 173.
31. ISO. (2023). *International Organization for Standardization. (2023). Langage clair et simple—Partie 1: Principes directeurs et lignes directrices (ISO 24495–1:2023)*. ISO. <https://www.iso.org/fr/standard/78907.html>
32. Ji, X. (2019). *Where design and law meet—An empirical study for understanding legal design and its implication for research and practice* (Master's thesis). Retrieved from Aalto University School of Arts, Design and Architecture.
33. Jones, J. C. (1992). *Design methods*. New York, NY: John Wiley & Sons.
34. Kahn, B. E. (2017). Using visual design to improve customer perceptions of online assortments. *Journal of Retailing*, 93(1), 29–42. doi:10.1016/j.jretai.2016.11.004
35. Khan, H. A. (2021). Business students' perspective of learning law education. *Studies of Applied Economics*, 39(10). doi:10.25115/eea.v39i10.5407
36. Kim, Y., & Jang, S. (2023). Analyzing the domestic industrial design curriculum based on NASAD certification and reconsidering the possibility of the design education quality improvement system of domestic universities: Case study of S University. *Archives of Design Research*, 36(1), 75–87. doi:10.15187/adr.2023.02.36.1.75
37. Krom, C. L., & Williams, S. V. (2011). Tell me a story: Using creative writing in introductory accounting courses to enhance and assess student learning. *Journal of Accounting Education*, 29(4), 234–249. doi:10.1016/j.jaccedu.2012.06.003
38. Kuckartz, U. (2014). *Qualitative Text Analysis: A Guide to Methods, Practice & Using Software*. SAGE Publications Ltd. doi:10.4135/9781446288719
39. Kujala, S., Walsh, T., Nurkka, P., & Crisan, M. (2014). Sentence completion for understanding users and evaluating user experience. *Interacting with Computers*, 26(3), 238–255. doi:10.1093/iwc/iwt036
40. Laugier, S. (2005). Actes de langage et états de choses: Austin et Reinach. *Les Études philosophiques*, 72(1), 73–97. doi:10.3917/leph.051.0073
41. Manna, V., Rombach, M., Dean, D., & Rennie, H. G. (2022). A design thinking approach to teaching sustainability. *Journal of Marketing Education*, 44(3), 362–374.
42. Micheaux, A., & Bosio, B. (2019). Customer journey mapping as a new way to teach data-driven marketing as a service. *Journal of Marketing Education*, 41(2), 127–140.
43. Moodley, S., & Mchunu, K. (2019). Students' reflection on co-design: A cross-disciplinary collaboration between two SADC countries. *South African Journal of Higher Education*, 33(2), 69–91.
44. Moraveji, N., Li, J., Ding, J., O'Kelley, P., & Woolf, S. (2007). Comicboarding: Using comics as proxies for participatory design with children. *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*, 1371–1374. doi:10.1145/1240624.1240832

45. Morris, R. J. (2007). Improving curriculum theory and design for teaching law to non-lawyers in built environment education. *Structural Survey*, 25(3/4), 279–292. doi:10.1108/02630800710772854
46. Niinikoski, S., & Toivonen, N. (2021). Legal design in education: Ways of teaching and the role of different disciplines in building legal design competence. In M. C. Compagnucci, H. Haapio, M. Hagan, & M. Doherty (Eds.), *Legal Design* (pp. 219–239). Cheltenham, UK: Edward Elgar Publishing.
47. Norman, D. (2013). *The design of everyday things: Revised and expanded edition* (Revised édition). Basic Books.
48. Pearce, G., & Lee, G. (2009). Viva voce (oral examination) as an assessment method: Insights from marketing students. *Journal of Marketing Education*, 31(2), 120–130.
49. Petty, R. D. (2000). Teaching marketing law: A business law perspective on integrating marketing and law. *Journal of Marketing Education*, 22(2), 129–136. doi:10.1177/0273475300222007
50. Pieterse, J. H., Caniëls, M. C., & Homan, T. (2012). Professional discourses and resistance to change. *Journal of Organizational Change Management*, 25(6), 798–818.
51. Pimont, S. (2019). Enseigner un formalisme inquiet: Remarques sur la place du formalisme dans l'enseignement du droit. *Revue de la Recherche Juridique-Droit prospectif*, 33, 1769–1778.
52. Razak, F. A., & Azmi, A. F. (2018). The effectiveness of studying commercial law through e-learning among UITM non-law students: Perceptions and guidelines. *E-Proceedings of the National Technology Research in Engineering, Design and Social Science Conference (nTrends'19)*.
53. Richardson, K., Butler, J., & Holm, E. (2009). Teaching law to non-law students: The use of problem solving models in legal teaching. *Studies in Learning, Evaluation, Innovation and Development*, 6(2), 29–41.
54. Robson, K., & Mills, A. J. (2022). Teaching, fast and slow: Student perceptions of emergency remote education. *Journal of Marketing Education*, 44(2), 203–216. doi:10.1177/02734753221084585
55. Rohm, A., Stefl, M., & Clair, J. (2018). Time for a marketing curriculum overhaul: Developing a digital-first approach. *Journal of Marketing Education*, 41(1), 47–59. doi:10.1177/0273475318798086
56. Rossi, A., & Palmirani, M. (2020). Can visual design provide legal transparency? The challenges for successful implementation of icons for data protection. *Design Issues*, 36(3), 82–96. doi:10.1162/desi\_a\_00605
57. Rouvière, F. (2021). Le droit dans l'œil du profane. *Les Cahiers Portalis*, 8(1), 117–131. doi:10.3917/capo.008.0117
58. Spanjaard, D., Garlin, F., & Mohammed, H. (2022). Tell me a story! blending digital storytelling into marketing higher education for student engagement. *Journal of Marketing Education*, 45(2), 167–182. doi:10.1177/02734753221090419
59. Wan Husain, W. S., Che Hassan, S. H., Nik Kamaruzaman, N. N., Wan Aziz, W. A. H., & Wan Abdul Rahman, W. F. (2020). From scratch to storyboard: Incorporating techniques for novice users. *Journal of Mathematics and Computing Science (JMCS)*, 6(2), 9–19.
60. Zhang, P., & Li, N. (2004). Love at first sight or sustained effect? The role of perceived affective quality on users' cognitive reactions to information technology. *Proceedings of the International Conference on Information Systems (ICIS'04)*, Washington,