

Comment and Analysis

Integrating law, technology, and design: teaching data protection and privacy law in a digital age

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Key Points

- The data protection lawyer of the future will be a key intermediary of innovation—or ‘transaction engineer’—who facilitates and coordinates new forms of business and other social relationships in rapidly evolving multi-disciplinary settings.
- The effective performance of this function requires legal professionals to develop a different mindset, along with new skills and capacities, specifically a better understanding of the underlying technologies and the value and techniques of legal design, as well as a knowledge of relevant data protection law.
- Transferable principles for teaching data protection law and privacy law in a digital age are identified. The article proposes a task-oriented, gamified, and sandbox approach to data

protection education that delivers a more relevant student experience that cultivates meaningful capacities and skills that are more closely aligned with the needs and values of a digital age.

Introduction

Data protection law and questions of privacy, more generally, are amongst the most disrupted and disruptive

sectors of the legal industry today. Algorithm and data-driven companies are driving market development across multiple sectors of the economy.¹ Moreover, the exponential growth of these technologies is creating innovative business models and offering new products and services for customers and clients. The health care and financial service sectors are good examples of such data-driven disruption.²

Technological changes make it possible to gather, integrate, and analyse vast amounts of data in unprecedented ways. Recent events such as the Snowden revelations of mass surveillance by intelligence services and government agencies,³ the Facebook–Cambridge Analytica scandal which concerned the obtaining of the personal data of millions of Facebook users without their consent,⁴ and court decisions such as the *Schrems II* case,⁵ which invalidated the European Union (EU)–

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1 Marcelo Corrales Compagnucci, Mark Fenwick and Helena Haapio, ‘Tomorrow’s Lawyer Today? Platform-driven Legal Tech, Smart Contracts & the New World of Legal Design’ (2018) 22(10) *Journal of Internet Law* 3.

2 Marcelo Corrales Compagnucci, Toshiyuki Kono and Shinto Teramoto, ‘Legal Aspects of Decentralized and Platform-driven Economies’ in Marcelo Corrales Compagnucci and others (eds), *Legal Tech and the New Sharing Economy* (Springer, Singapore 2019), 1–14.

3 Ewen Macaskill and Gabriel Dance, ‘NSA Files Decoded: What the Revelations Mean for You’ *The Guardian* (1 November 2013) <<https://www.theguardian.com/world/interactive/2013/nov/01/snowden-nsa-files-surveillance-revelations-decoded#section/1>> accessed 20 April 2021; Glenn Greenwald, *No Place to Hide: Edward Snowden, The NSA, and the US Surveillance State* (Metropolitan Books, New York 2014).

4 Christopher Wylie, *Mindf*ck: Cambridge Analytica and the Plot to Break America Hardcover* (Random House 2019); Brittany Kaiser, *Targeted: The Cambridge Analytica Whistleblower’s Inside Story of How Big Data, Trump, and Facebook Broke Democracy and How It Can Happen Again* (Harper Audio, New York 2019).

5 *Schrems II*, Case C-311/18 *Data Protection Commissioner v Facebook Ireland Ltd and Maximilian Schrems* [2020] ECLI:EU:C:2020:559.

US Privacy Shield framework of data transfers,⁶ have raised awareness and concerns about the protection of personal data among legal professionals, the business sector, and the public, more generally. Regulators have responded to such concerns with far-reaching regulatory interventions, such as the General Data Protection Regulation (GDPR)⁷ in Europe and the California Consumer Protection Act (CCPA)⁸ in the USA.

The recent Coronavirus Disease 2019 (COVID-19) pandemic has exacerbated the effects of the digital transformation.⁹ For example, the pandemic has pushed us further into digital spaces, and changes in behaviour are likely to have lasting effects when the economy returns to normal.¹⁰ The pandemic has also increased the uptake of technology-based solutions, tools, and services, accelerating and amplifying the global transition towards a digital economy.¹¹

Given the centrality of data and data protection to our collective future, it is vital that data protection becomes a central pillar of legal education, and it is for this reason that we have set out to identify principles that might drive the development of a new style of data protection education at a graduate level, which integrates an in-depth understanding of law, cutting-edge technologies, and legal design. This will provide students with an opportunity to build upon basic knowledge they acquired as undergraduates and help them to understand—from both an interdisciplinary and technical perspective—how data protection law can interact with innovative products (software and hardware) and services in real-world settings. Moreover, it seems clear that future data protection regulation will be increasingly embedded in the architectural design of the technology itself,¹² following the ‘privacy by design and by default’ approach.¹³ As such, data protection lawyers will

operate in multi-disciplinary teams, comprising coders and designers.

This new operating environment means that students must acquire a new way of thinking and data protection lawyers of the future will become innovation intermediaries or ‘transaction engineers’.¹⁴ As such, the next generation of data protection lawyers will play a vital role mediating between various actors, organizations, and communities, coordinating, and reinforcing a dialogue between diverse professions and businesses. The data protection lawyer of the future needs to be able to understand not only the technical and legal issues involved, but also the necessary human–machine interactions and the interfaces between the various stakeholders and complex systems. As such, transaction engineers will be the linchpin that facilitate business innovation and user creativity across multiple sectors of the economy.

This article, therefore, aims to identify and describe some fundamental principles for the advancement of data protection education in this new context, exploring new teaching methodologies and student learning outcomes. Section ‘The disruption of education in a digital age’ briefly outlines the broader context of the disruption of education in a digital age. Section ‘The lawyer of the future as transaction engineer’ suggests that lawyers have been at their most effective when operating as transaction engineers that create opportunities for new forms of business and other social relationships and suggest that this provides a model for the data protection lawyer of the future. Section ‘Principles for integrating law, technology, and design in the legal education of tomorrow’ identifies core principles that can form the basis for designing a programme based on

6 Timo Minssen and others, ‘The EU-US Privacy Shield Regime for Cross-border Transfers of Personal Data under the GDPR: What are the Legal Challenges and How Might These Affect Cloud-based Technologies, Big Data, and AI in the Medical Sector?’ (2020) 4(1) *European Pharmaceutical Law Review* 34; Marcelo Corrales Compagnucci and others, ‘Lost on the High Seas Without a Safe Harbor or a Shield? Navigating Cross-border Transfers in the Pharmaceutical Sector after *Schrems II* Invalidation of the EU-US Privacy Shield’ (2020) 4(3) *European Pharmaceutical Law Review* 153; Marcelo Corrales Compagnucci, Mateo Aboy and Timo Minssen, ‘Cross-border Transfers of Personal Data after *Schrems II*: Supplementary Measures and New Standard Contractual Clauses (SCCs)’ (2021) 4(2) *Nordic Journal of European Law* 37.

7 *EU General Data Protection Regulation (GDPR)*: Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regards to the processing of personal data and on the free movement of such data and repealing Directive 95/46/EC (General Data Protection Regulation), OJ 2016 L 119/1.

8 California Consumer Privacy Act of 2018 [1798.100 – 1798.199.100].

9 See Mark Fenwick, Joseph A McCahery and Erik PM Vermeulen, ‘Will the World Ever be the Same After COVID-19: Two Lessons from the

First Global Crisis of a Digital Age’ (2020) 21(1) *European Business Organization Law Review* 1.

10 UNCTAD, ‘The COVID-19 Crisis: Accentuating the Need to Bridge the Digital Divide’ (6 April 2020) <https://unctad.org/system/files/official-document/dtlnf2020d1_en.pdf> accessed 20 April 2021.

11 UNCTAD, ‘Coronavirus Reveals Need to Bridge the Digital Divide’ (6 April 2020) <<https://unctad.org/news/coronavirus-reveals-need-bridge-digital-divide>> accessed 20 April 2021; World Economic Forum, ‘The COVID-19 Pandemic Has Changed Education Forever. This is How’ (2020) <<https://www.weforum.org/agenda/2020/04/coronavirus-education-global-covid19-online-digital-learning/>> accessed 10 May 2021.

12 See Lawrence Lessig, *Code. And Other Laws of Cyberspace* (Basic Books, New York 1999).

13 Arts 25(1) and 25(2) of the GDPR.

14 This concept is adapted from Lisa Bernstein, ‘The Silicon Valley Lawyer as Transaction Cost Engineer?’ (1995) 74 *University of Oregon Law Review* 239. See also, Mark Fenwick and Erik PM Vermeulen, ‘The Lawyer of the Future as Transaction Engineer: Digital Technologies and the Disruption of the Legal Profession’ in Marcelo Corrales, Mark Fenwick and Helena Haapio (eds), *Legal Tech, Smart Contracts and the Law* (Springer, Singapore 2019), 253–72.

our experience as lawyers and educators. Section ‘Conclusion’ concludes.

The disruption of education in a digital age

Over the last half-century, digital technologies have transformed the world. The emergence of computer-based devices and communication infrastructures have triggered multiple economic, social, and cultural effects. The term, ‘digital transformation’, is often used to refer to this shift from analogue, electronic, and mechanical machines to networked, digital devices, and the ongoing social effects associated with the proliferation of these new technologies.¹⁵ This process of digitization began in earnest with the launch of the Intel microprocessor in California in the early 1970s and has been driven by an ongoing series of technological innovations, most significantly cheaper and smaller digital hardware (first PCs and, more recently, smartphones); global communication networks and mass connectivity (the Internet); and cloud-based data storage and algorithm-driven processing.

With ever-shorter innovation cycles, it seems obvious that these new digital technologies will continue to transform every aspect of our lives. Constant technological disruption is now the new normal and old-world ideas, practices, and organizations are becoming less relevant, even if they are still, obviously, influential. Software has gone from being a tool in assisting work to a fundamental infrastructure that defines and gives structure to our everyday lives. Software is, as tech entrepreneur and venture capitalist, Marc Andreessen, so dramatically put it in 2011 in *The Wall Street Journal*, ‘eating the world’.¹⁶

Until recently, education has been relatively insulated (compared to the business world) from the disruptive impact of the digital transformation. The new, post-pandemic operating environment, however, creates enormous challenges and competitive pressures for all education, including legal education in data protection law. Key questions include: *What* should we be teaching our law students today? *What* skills and capacities best prepare today’s students for the complex and uncertain

world of tomorrow? *How* should we adapt traditional educational methods for a new digital age?

Education has, from a historical perspective, tended to be backward-looking, and knowledge based. Transmitting the settled body of knowledge of the past has functioned as the starting point for our whole approach to education. For instance, in a legal context, students have traditionally analysed existing laws and previous court decisions. The idea has been that if you understood the historical development of law and the settled, established principles of the legal system, you would be able to solve future problems via the application of old doctrines and precedents to new situations. From time to time, ‘gaps’ might be uncovered, but the default position was a firm confidence in the capacity of the settled system of the past to manage any problems that arose in the present or future. Law was backwards looking, but in a way that allowed it to engage successfully with the present and the future.¹⁷

The responsibility of the educator in this approach to education was to acquire and then transmit this body of settled, authoritative, expert knowledge. And in a world of information asymmetries, the educator–student relationship was, by necessity, a hierarchical one. After all, the teacher possessed all the knowledge (desired by the student), and this knowledge provided the source of their credibility and legitimacy as educators. In a legal context, some practical experience as a lawyer or other legal professional was always deemed important, but the ultimate source of an educator’s authority was the possession of the right kind of knowledge and the ability to communicate it in a classroom environment.¹⁸

However, this model seems far less suited to a world of easy access to information, self-learning, and fast-paced, technology-driven economic and social change. In a digital age, the transaction costs of acquiring relevant and up-to-date information are much lower. Whereas in the past, educators enjoyed a monopoly over the possession of the relevant body of knowledge, we now live in a world where knowledge is only ever a Google search away.¹⁹ Therefore, the focus of education in data protection law needs to shift away from a knowledge-oriented approach towards a more forward-looking model focused on fostering skills and capacities.

15 See, generally, Simon Van Wyk and Ray Welling, *Digital Disruption and Transformation: Lessons from History* (Welling Digital, New South Wales 2018); Thomas M Siebel, *Digital Transformation: Survive and Thrive in an Era of Mass Extinction* (Rosetta Books, New York 2019).

16 Marc Andreessen, ‘Why Software is Eating the World’ (*Andreessen Horowitz Blog*, 2011) <<https://a16z.com/2011/08/20/why-software-is-eating-the-world/>> accessed 20 May 2021.

17 See Mark Fenwick, Wulf A Kaal and Erik PM Vermeulen, ‘Regulation Tomorrow: What Happens When Technology is Faster than the Law’ (2017) 6(3) *American University Business Law Review* 561.

18 Erik PM Vermeulen, ‘Why I Stop Being a Teacher this Summer’ (*Medium*, 18 June 2021) <<https://medium.com/age-of-awareness/why-i-stop-being-a-teacher-this-summer-38fe1143892d>> accessed 27 June 2021.

19 Kirk McAlpin, *The Informed Brain in a Digital World: Interdisciplinary Research Teams Summary* (National Academies Keck Future Initiatives 2013) 4. This trend is not unproblematic. For example, the visibility of minority opinions may be reduced, and the purveyors of these technologies may have an enhanced influence over the future development of law because of their control of search results.

In the same way that business has been transformed over the three decades by the arrival of digital technologies, it is not unreasonable to believe that legal education will face similar levels of disruption over coming decades.

For a start, everyone is going to need a much better technical grasp of the core technologies surrounding computers, communication networks, and developments in digital technologies, such as artificial intelligence (AI).²⁰ For many of us, the underlying technologies that are driving the digital transformation remain a mystery, and that is a problem. Practical technical knowledge needs to be integrated into the curriculum of data protection law courses, and coding and data analysis seem a good starting point.²¹

But we also need to identify other subject-specific skills and capacities that are important in a world of constant change. The focus should be on building skills that will assist the next generation in making better decisions under conditions of cognitive and normative uncertainty. This is where design-thinking can add extra value. Higher education can play a crucial role in defining the future—as a platform or sandbox for experimenting with different visions of tomorrow's world. But this vision of education as a sandbox should not trigger a descent into science fiction or fantasy. Instead, visions of the future must be grounded in real-world problems and the creation of workable solutions. But—unlike the real world—there is time to reflect, and 'failure' is not punished. Educational institutions thereby offer a safe space and the freedom to think big and the environment to test out new ideas.

The lawyer of the future as transaction engineer

From a historical perspective, at least in the context of business, lawyers have been most effective when they have created opportunities for new forms of business and other social relationships.²² Consider the development and growth of Silicon Valley as a centre for digital

technologies in the early 1970s.²³ While the idea of the clustering of similar businesses was a significant source of innovation, there is a broad consensus that the legal industry was important in the development of technology firms and in facilitating innovation.²⁴ For example, lawyers were responsible for drafting the innovative contractual provisions that protected high-risk investors—for instance, angel investors and venture capitalists—from the relational and performance risks associated with investing in young companies and inexperienced founder-entrepreneurs.²⁵ Moreover, the involvement of lawyers in both non-legal and legal activities, such as deal making, matchmaking, gatekeeping, and conciliating, also served as an important sorting device for entrepreneurs that needed more than just investors to start and scale their young businesses. Finally, the contractual mechanisms and the lawyer-dominated market for reputation reduced information asymmetries between the entrepreneurs and investors and, as such, were necessary to bring the demand and supply-side of venture capital together.²⁶

The Silicon Valley example shows how lawyers functioned as socially useful relationship engineers and law firms operated as crucial intermediaries that brought together various parties with different but mutually compatible interests and novel forms of expertise. Lawyers were not only acting in the interests of their clients, but a secondary effect of their work was to open a new space for innovative startups to flourish. On this type of account, the often-neglected contribution of law firms in the institutionalization of venture capital and venture capital contracting goes some way in explaining the success of Silicon Valley.²⁷ The legal profession was a crucial factor in creating an exciting and economically significant new world.

Following in this tradition, data protection lawyers of the future will need to be able to assume the role of 'project managers' or, at least, active participants in multi-disciplinary teams that will collaborate in designing new solutions for the problems of the future. The ability to work with, communicate with, and mediate

20 See Richard Susskind, *The End of Lawyers: Rethinking the Nature of Legal Services* (OUP, Oxford 2019).

21 See Mark Fenwick, Wulf A Kaal and Erik PM Vermeulen, 'Legal Education in a Digital Age: Why Coding for Lawyers Matters' (2018) U of St Thomas (Minnesota) Legal Studies Research Paper 18-21 <https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3227967> accessed 21 June 2021.

22 Lawyers are not a homogeneous group and although we think the following is relevant for all lawyers, our primary focus here is on those working for corporate law firms or as in-house lawyers in the compliance departments of larger companies.

23 See Anupam Chander, 'How Law Made Silicon Valley' (2014) 63 *Emory Law Review* 239, 639.

24 Joseph A McCahery, Erik PM Vermeulen and Andrew M Banks, 'Corporate Venture Capital: From Venturing to Partnering' in Douglas Cumming (ed), *The Oxford Handbook of Venture Capital* (OUP, Oxford 2012), 212.

25 Bernstein (n 14).

26 See Vijay Mehta, 'Principal-agent Issues in Private Equity and Venture Capital' (2004) <https://repository.upenn.edu/cgi/viewcontent.cgi?referer=https://www.google.com/&httpsredir=1&article=1013&context=wharton_research_scholars> accessed 21 June 2021; Daniel Schmidt 'Entrepreneur's Choice Between Venture Capitalist and Business Angel for Start-up Financing' (2013) *GRIN* <<https://www.grin.com/document/230839>> accessed 21 June 2021.

27 McCahery, Vermeulen and Banks (n 24) 211–12.

obvious advantage of switching to online teaching was the possibility of offering something ‘like’ the on-campus experience: Universities did not need to shut down completely. However, the result was a disconnection for some students who struggled to engage with the content. And yet, it would be a mistake to believe that everything was functioning well before the pandemic. Education was increasingly disconnected from the fast-changing realities of a digital age.³⁶ The return to normal offers an opportunity to re-consider our approach to education pre-pandemic. Here, we identify five principles that might inform the future design of data protection education.

Understand the interests and needs of the students

The first step is to getting to know the students.³⁷ Who are they? What skills and knowledge do they already have? What do they want from the class and want to improve? What are their expectations and aspirations? There is some value in formalizing this process. For example, an online survey followed up by either in-person or online face-to-face meetings with either individual students or small groups of students depending on class size. The objective of this ‘survey plus face-to-face meetings’ approach is to collect pertinent information and analyse students’ perceptions and expectations concerning the study programme. This takes time but adds genuine value, both in delivering a more customized experience and in managing expectations of what is possible and desirable. Equally, it offers students the chance to understand more about the course instructors and their interests and background, which can build trust and confidence.

Having implemented this type of exercise on several occasions, recurrent patterns have emerged. First, there is the diversity of the contemporary student body, both in terms of background and the range of (often unexpected and interesting) pre-existing knowledge and relevant skills. Secondly, there is the strong interest amongst students in learning more about the practical side of law, which is often frustrated in traditional education settings and approaches.³⁸ There has always been a tension between the theoretical and practical elements

in legal education, but it becomes increasingly clear that a more practical orientation is essential, and that theory must be introduced in practical settings—theory meets practice—rather than as pure theory that is disconnected from practice.³⁹

An additional benefit of a ‘getting to know each other exercise’ is to compare the reality of the student body with the so-called ‘implied student’.⁴⁰ The implied student is an analytical concept used in educational settings to investigate, understand, and improve teaching methods. It can be thought of as the bundle of characteristics of the optimal student that is presupposed in the teaching plans, readings, discussions, evaluations, and other arrangements for a course. In other words, it is a hypothetical construct that the teacher has, either explicitly or, more usually, implicitly, of the role model or ideal student.⁴¹ Every class has an implied student and reflecting on and teasing out the characteristics of such a model can add value by obliging a teacher to think about their audience and what they want from the group.

Nevertheless, there will always be some degree of mismatch between the implied student and the ‘real’ students in a class. A benefit of getting to know the students is that this construction can be compared with empirical finding about the actual students that attend the class, and this gap can be closed. This, in turn, can help teachers to redesign and customize the study programme based on the student’s actual knowledge, prior experience, and expectations.

For example, in a previous course, the fact of having some students working at the police raised the idea to focus more on the criminal and forensic aspects of data protection law. This also triggered the idea of having special sessions on more specific topics and having guest speakers with special knowledge on these subjects. This dynamic and reflexive exercise of thinking about the kind of student that the course presupposes as the ideal and comparing them with the actual composition of the class, facilitates the identification of more relevant and engaging content that creates a more satisfying learning experience for everyone. It also gives students a sense of ownership over the course and its content if they feel the course content is being re-designed with their interests in mind.

36 Jennifer Rider and Ayla Moore, ‘Scaling hyFlex for the Post-pandemic Campus’ (13 August 2021) <<https://er.educause.edu/articles/2021/8/scaling-hyflex-for-the-post-pandemic-campus>> accessed 28 November 2021.

37 Bjørn F Johannsen, Lars Ulriksen and Henriette Tolstrup Holmegaard, ‘Who are the Students?’ in Lotte Rienecker and others (eds), *University Teaching and Learning* (Samfunds Litteratur, Copenhagen 2015), 115–32.

38 Philip Schrag and Michael Meltsner, *Reflections on Clinical Legal Education* (Northeastern University Press, Boston 1998), 314.

39 See, eg, Jules Coleman, *The Practice of Principle: In Defence of a Pragmatist Approach to Legal Theory* (OUP, Oxford 2001).

40 Lars Ulriksen, ‘The Implied Student’ (2009) 34(5) *Studies in Higher Education* 517.

41 David Starr-Glass, ‘Faculty Response to the Opportunities of the Digital Age: Towards a Service Culture in the Professoriate’ in Victor Wang (ed), *Handbook of Research Learning Outcomes and Opportunities in the Digital Age* (IGI Global, Hershey 2016), 102–26.

Embrace active learning and problem solving

Law faculties have tended to follow a traditional teaching and learning approach centred on the classroom experience. The teacher—as source of knowledge and authority—is front and centre with the typical lecture-based format followed by a Q&A session at the end. Traditional evaluation methods consisted of a final oral or written examination in which students are expected to reproduce what they learned. While this approach has some advantages, we believe that it is becoming obsolete or, at least, much less relevant. There is an increasing need to rethink teaching and learning materials and methods in legal education, and they should be better aligned with specific learning environments and activities.⁴² It is important to introduce active methods of teaching to engage the students with the experience as pointed out by Dewey's social learning theory.⁴³ Dewey focused on learning and experience. He considered that education should be an archetype of the social environment and that students learn best when they are participating in a natural social setting.⁴⁴ This means that we must make the students engage with the experience and give them activities to learn—having students simply discuss something together is not enough.

Active learning is based on a student-centred and collaborative approach in which the responsibility of learning is placed on the student. It is associated with the idea that students take a more proactive role while the position of the teachers changes accordingly. In active learning, teachers become facilitators, monitoring the learning activities rather than one-way providers or intermediaries of information.⁴⁵

Active learning is a recurring theme in contemporary education debates.⁴⁶ The advantages of active learning are manifold. Active learning stimulates the attention and can generate a fruitful discussion during the class.

This also allows to receive peer feedback from the students which in turn triggers more critical thinking. Active learning should be relevant and within a meaningful context. In short, students learn by doing.⁴⁷ Some examples of active learning techniques used in our classes are case studies, group projects, debates, and assessment activities such as online quizzes. All these methods encourage active participation and promote a sense of achievement after the class.⁴⁸ Quizzes, eg, are more fun than a formal test and proved to be an effective mechanism for incentivizing students' engagement and completion of preparatory work.⁴⁹

Another good example for engaging students in active learning, particularly in legal education, is role-playing. In role-playing, students take the role of a person or stakeholder group, allowing them to apply the content they have learned, but also to think about and see the world from a different perspective. This technique can be combined with a problem-based learning activity where they can work through 'ill-structured problems'. Ill-structured problems attempt to mirror real world problems with conflicting data, theories, assumptions, and values.⁵⁰

The idea of ill-structured problems seems relevant in a legal context. After all, lawyers are familiar with the idea of 'hard cases'—cases where the interpreter faces unclear linguistic expressions or conflicting legal precedents.⁵¹ In a data protection context, think of the landmark *Google Spain* case⁵² which concerned the tension between the freedom of the press and the so-called right to be forgotten.⁵³ In this case, there were different parties involved. Students could be divided into three groups: One group could represent the view of Google Spain SL and Google Inc. Another group could represent the view of the plaintiff Mario Costeja Gonzalez, and the other group of students could represent the

42 Rick Glofcheski, 'Rethinking Teaching, Learning and Assessment in the Twenty-first Century Law Curriculum' in Christopher Gane and Hui Huang (eds), *Legal Education in the Global Context* (Routledge, London 2016).

43 Kenneth Colburn and Rona Newmark, 'Service-learning for the Twenty-first Century: Connecting Communities, Disciplines, and Nations' in Kenneth Colburn and Rona Newmark (eds), *Service-Learning Paradigms: Intercommunity, Interdisciplinary & International* (University of Indianapolis Press, Indianapolis 2007), 8; Philip Lee, 'Reclaiming Harvard Law School: An Expression of Student Academic Freedom' in Joseph Hermanowicz (ed), *Challenges to Academic Freedom* (Johns Hopkins University Press, Baltimore 2021) 227.

44 Morgan Williams, 'John Dewey in the Twenty-first Century' (2017) 9(1) *Journal of Inquiry and Action in Education* 91.

45 Samuel Fournier St Laurent and Bruno Poellhuber, 'Change Process of Two Post-secondary Teachers in the Early Adoption of an Active Learning Classroom' in Robert Cassidy and others (eds) *Active Learning: Theoretical Perspectives, Empirical Studies and Design Profiles* (Frontiers in ICT and Frontiers in Education, Lausanne 2019), 158.

46 Paul Baepler and others, *A Guide to Teaching in the Active Learning Classroom: History, Research and Practice* (Stylus Publishing, Sterling 2016).

47 Cheryl Patton, 'Employing Active Learning Strategies to Become the Facilitator, Not the Authoritarian: A Literature Review' (2015) 4 *Journal of Instructional Research* 134.

48 Therese Huston, *Teaching What You Don't Know* (Harvard University Press, Cambridge 2009); Monica Diochon and Ann Frances Cameron, 'Technology-based Interactive Learning: Designing an International Student Research Project' (2001) 2(2) *Active Learning in Higher Education* 114.

49 Brain Robert Cook and Andrea Babon, 'Active Learning Through Online Quizzes: Better Learning and Less (Busy) Work' (2017) 41(1) *Journal of Geography in Higher Education* 24.

50 St Laurent and Poellhuber (n 45).

51 Ronald Dworkin, 'Hard Cases' (1975) 88(6) *Harvard Law Review* 1057.

52 *Google Spain*, Case C-131/12. *Google Spain SL and Google Inc v Agencia Española de Protección de Datos (AEPD) and Mario Costeja González*. ECLI:EU:C:2014:317.

53 Art 17 of the GDPR.

position of *La Vanguardia* newspaper. Students could maintain their role throughout the entire course. This way they could learn and experience the content in a deeper way and think beyond the boundaries of the classroom setting.⁵⁴ Such an approach also creates a more collaborative experience. Students need to get to know each other and role-playing creates opportunities for students to interact with each other and build team spirit. This will provide a source of friendship and camaraderie among the students and such a collaborative mindset can provide a source of motivation and engagement for personal and professional growth.

An alternative to relying on real-world cases, like the *Google* case, is for the class instructors to develop a hypothetical hard case or pick up on challenging real-world inspired situations and get the students to work through the problem over the course of the course. Some data protection specific problems might include developing the so-called privacy labels or thinking about developments in cloud-based computing and privacy. For example, several startups right now are focusing on the idea of a so-called user-held data model.⁵⁵ These companies help individuals gather and integrate their personal data from multiple different sources such as wearables, sensors, as well as online services into one single place (the so-called ‘personal data cloud’).⁵⁶ A personal data cloud enables not only the storage of the most up-to-date personal data from multiple sources but also creates opportunities for individuals to get everyday value from their own data. Such value is generated on the individual’s side: individuals can gain better insights, recommendations, and nudges utilizing apps that activate this cloud-stored user-held data. Thinking

about the diverse legal and regulatory issues involved in deploying an innovative business model would be an example of cutting-edge, active problem-solving in a data protection context.

Integrate design thinking with proactive legal thinking

Instead of litigating or providing *ex-post* services, many lawyers—particularly corporate in-house counsel and transactional lawyers—now work proactively and preventively.⁵⁷ In a compliance-driven environment, there is a much greater *ex ante* focus and much of this work is done in multi-disciplinary teams.⁵⁸ Lawyers may, eg, be involved in providing technologically enhanced legal services⁵⁹ or helping to build platforms, systems, services, or solutions that provide legal protection ‘by design’—ie, solutions that enable and empower people, including people without any legal background to do their job in such a way that complying with legal requirements is built-in and easy to accomplish.⁶⁰ Promoting clients’ chances of success and preventing unnecessary problems can be framed as practicing Preventive Law⁶¹ or Proactive Law.⁶² It can also be framed as practicing legal design.⁶³ Devising course content that cultivates this knowledge and skills is our third principle.

In the context of the kind of transactional lawyering advocated here much of the lawyer’s work is about defining the future in such way that various risks—business, economic, security, and legal—are mitigated. And the best time for legal input is when planning a system, platform, notice, or other activity. When systems and

54 SERC, Carleton, ‘Active Learning, Role-playing’ <<https://serc.carleton.edu/sp/library/interactive/roleplay.html>> accessed 10 May 2021.

55 For example, see Prifina <<https://www.prifina.com/>> accessed 8 June 2021.

56 Here, we adopt the definition of personal data clouds from ENISA: ‘Personal Data Clouds (“PDCs”) are defined as technological solutions aiming to provide to end-users the typical data collection and storage capabilities of data management systems but also, to help end-users regain control over their data. Accordingly, PDCs are ideally embedded by privacy-enhancing elements allowing individuals to determine on their own how they want their data to be managed in and outside of the solution and with whom they should be shared.’ See ‘ENISA, Privacy and Security in Personal Data Clouds’ 5 <<https://www.enisa.europa.eu/publications/privacy-and-security-in-personal-data-clouds>> accessed 29 November 2021.

57 See, eg, Arianna Rossi and Helena Haapio, ‘Proactive Legal Design for Health Data Sharing Based on Smart Contracts’ in Marcelo Corrales Compagnucci, Mark Fenwick and Stefan Wrbka (eds) *Smart Contracts: Technological, Business and Legal Perspectives* (Hart Publishing, Cheltenham 2021).

58 In the words of David Howarth, ‘[I]like engineers, transactional and legislative lawyers want to make something useful that works for their clients. . . . Unlike the objects created by engineers, lawyers’ objects are embodied

not in metal or concrete or plastic, but in relationships between people, and they are designed in words rather than in drawings.’ See David Howarth, *Law as Engineering. Thinking about What Lawyers Do* (Edward Elgar Publishing, Cheltenham 2013), 67.

59 Václav Janeček, Rebecca A Williams and Ewart Keep, ‘Education for the Provision of Technologically Enhanced Legal Services’ (2021) 40 *Computer Law & Security Review* 105519.

60 See, eg, Arianna Rossi and Helena Haapio, ‘Proactive Legal Design: Embedding Values in the Design of Legal Artefacts’ in Erich Schweighofer, Franz Kummer and Ahti Saarenpää (eds), *Internet of Things. Proceedings of the 22nd International Legal Informatics Symposium IRIS 2019* (Editions Weblaw, Bern 2019).

61 Louis M Brown, *Preventive Law* (Prentice-Hall, Hoboken 1950). One of his fundamental premises was that in curative law it is essential for the lawyer to predict what a *court* will do, while in Preventive Law it is essential to predict what *people* will do.

62 See, eg, George J Siedel and Helena Haapio, ‘Using Proactive Law for Competitive Advantage’ (2010) 47(4) *American Business Law Journal* 641.

63 See Marcelo Corrales Compagnucci and others (eds) *Legal Design: Integrating Business, Design and Legal Thinking with Technology* (Edward Elgar Publishing, Cheltenham 2021).

solutions work for their users in this way, reactive legal help is much less likely to be required. Instead of fire-fighting after the event, the lawyer of tomorrow will be expected to focus on supporting collaboration and contributing to desirable outcomes, creating opportunities, and preventing problems *before* they arise. This requires communication, policies, and processes that are not only legally functional but also accessible and usable for the people who work with them. Lawyers need to develop the necessary know how to produce such communications and effective outcomes, and this is where proactive legal thinking and design thinking become essential.

The pioneers of Proactive Law were among the first to ask questions about the functionality, usability, and user experience of conventional contracts and legal documents.⁶⁴ When they joined forces with information designers, the dysfunction and unnecessary complexity in extant legal communications became obvious, both in research and, increasingly, in practice.⁶⁵ With the development of digital content, new professionals—computer scientists, computational linguists, technical writers, and developers—entered the field, helping to bring Proactive Law closer to practice and embed its goals in new systems and solutions. In recent years, across several continents, researchers and practitioners have started to explore new ways of simplifying the communication of complex legal messages. Computable and smart contracts have emerged,⁶⁶ along with

simplified and visualized contracts and privacy communication, all of which seem to share similar objectives in this regard.⁶⁷

When looking for ways to solve complex human problems, it has become commonplace to search for answers in and from design methods, principles, and practices.⁶⁸ The British Design Council's Double Diamond⁶⁹ is often used to describe a typical design process: one where it is crucial to first determine the *right* problem—meaning 'right' from the end-users' point of view—and then taking action to solve it. Too often, this first step does not get as much attention as it deserves. The first diamond—discover and define—helps us understand, rather than assume, what the real problem is. This often involves talking with the users and defining the problem in a new way. The second diamond—develop and deliver—encourages us to find many possible solutions to the problem and prototype and test them early and at small-scale, so that we can reject the ones that do not work and improve those that do.

As such, Legal Design borrowed from architects, software engineers and interaction designers the idea of 'design patterns' as a useful way to identify and share good practices in resolving recurring problems.⁷⁰ An early example is offered by Juro, a UK-based contract automation platform. Working with Stefania Passera, a design scholar and practitioner, they set out 'to build a privacy notice that people could actually read'. The project

64 See, eg, George Siedel and Helena Haapio, *Proactive Law for Managers: A Hidden Source of Competitive Advantage* (Gower, Farnham 2011); Gerlinde Berger-Walliser, 'The Past and Future of Proactive Law: An Overview of the Development of the Proactive Law Movement' in Gerlinde Berger-Walliser and Kim Ostergaard (eds), *Proactive Law in a Business Environment* (DJOF Publishing, Copenhagen 2012).

65 See, eg, Helena Haapio, *Next Generation Contracts: A Paradigm Shift* (Lexpert, Helsinki 2013); Robert Waller and others, 'Cooperation Through Clarity: Designing Simplified Contracts' (2016) *Journal of Strategic Contracting and Negotiation* 2(1–2): 48; and Stefania Passera, 'Beyond the Wall of Contract Text – Visualizing Contracts to Foster Understanding and Collaboration within and across Organizations' (Doctoral dissertation, Aalto University 2017).

66 For computable contracts, see Harry Surden, 'Computable Contracts' (2012) 46(2) *University of California Davis Law Review* 629. The idea of smart contracts was introduced by Nick Szabo in the 1990s, see Nick Szabo, 'Formalizing and Securing Relationships on Public Networks' (1997) 2(9) *First Monday* <<http://firstmonday.org/ojs/index.php/fm/article/view/548>> accessed 23 June 2021. See, eg, Marcelo Corrales Compagnucci, Mark Fenwick and Stefan Wrbka (eds), *Smart Contracts: Technological, Business and Legal Perspective* (Hart Publishing, Cheltenham 2021); Marcelo Corrales, Mark Fenwick and Helena Haapio (eds), *Legal Tech, Smart Contracts and Blockchain* (Springer, Singapore 2019). The idea of 'wise contracts': smart contracts that work for people and machines was introduced in James Hazard and Helena Haapio, 'Wise Contracts: Smart Contracts that Work for People and Machines' in Erich Schweighofer and others (eds), *Trends and Communities of Legal Informatics. Proceedings of the 20th International Legal Informatics Symposium IRIS 2017* (Österreichische Computer Gesellschaft, Vienna 2017).

67 See, eg, Gerlinde Berger-Walliser, Robert C Bird and Helena Haapio, 'Promoting Business Success Through Contract Visualization' (2011) 17 *The Journal of Law, Business & Ethics* 55; Stefania Passera, 'Beyond the Wall of Contract Text – Visualizing Contracts to Foster Understanding and Collaboration Within and Across Organizations' (Doctoral dissertation, Aalto University 2017); Helena Haapio and Thomas D Barton, 'Business-friendly Contracting: How Simplification and Visualization Can Help Bring It to Practice' in Kai Jacob, Dierk Schindler and Roger Strathausen (eds), *Liquid Legal* (Springer, Cham 2017).

68 Richard Buchanan, 'Systems Thinking and Design Thinking: The Search for Principles in the World We are Making' (2019) 5(2) *The Journal of Design, Economics, and Innovation* 85, 86.

69 Launched in 2004, the Double Diamond has become world-renowned. See Design Council, 'What is the Framework for Innovation? Design Council's Evolved Double Diamond' <<https://www.designcouncil.org.uk/news-opinion/what-framework-innovation-design-councils-evolved-double-diamond>> accessed 9 June 2021.

70 See, eg, Helena Haapio and Margaret Hagan, 'Design Patterns for Contracts' in Erich Schweighofer and others (eds), *Networks. Proceedings of the 19th International Legal Informatics Symposium IRIS 2016* (Österreichische Computer Gesellschaft OCG, Vienna 2016); Helena Haapio and Stefania Passera, 'Contracts as Interfaces: Visual Representation Patterns in Contract Design' in Daniel M Katz, Ron Dolin and Michael J Bommarito (eds), *Legal Informatics* (CUP, Cambridge 2021); Arianna Rossi and Gabriele Lenzi, 'Transparency by Design in Data-informed Research: A Collection of Information Design Patterns' (2020) 37 *Computer Law & Security Review* 105402.

succeeded, and their privacy policy became one of the most commonly-cited policies in the world, frequently used as an example of clean information design and best practice in the field.⁷¹ In addition to a short summary, ‘your privacy at a glance’,⁷² the privacy policy offers clear headings, bullet point summaries, layering and visuals to show what people want to know—and if they want to know more, they can click on a provided link and find out more. A timeline shows when and how Juro collects data as people interact with their service. The summary page and the full policy were so impressive that many people started to copy them. In the spring of 2021, the creators decided to make the design patterns of the privacy notice and the code base on GitHub openly accessible for those who want to deploy them in their own privacy notice.⁷³

Merging proactive legal thinking with design thinking in this way, helps lawyers put users at the centre and create solutions that work for users and not against them. At the same time, those solutions can promote transparency, autonomy, privacy, security, fairness, and accountability. Applying these methods, future lawyers working as transaction engineers can learn to create solutions, eg privacy communication and terms, that are legally functional, and that people can read and understand. Hands-on exercises can be used so students can learn to master the use of design patterns and existing templates that can help them in this endeavour.⁷⁴

Implementing this kind of approach in legal education can be done by introducing students to general design principles and focusing on examples of best practice like Juro. The combination of proactive thinking and design principles provides students with the resources and experience to develop their own unique solutions to the real world or hypothetical problems discussed in the previous section.

At the same time, students need to be made much more aware of the technologies and the capacity of

technologies to achieve the goals of proactive lawyering. Lawyers do not need to become designers or coders—design and coding are distinct skills that take on an ever-greater importance. But the lawyer of the future needs to cultivate the necessary knowledge—or literacy—to seamlessly partner with, and mediate between, multiple perspectives, and facilitate the successful interfacing of human and machine.⁷⁵ In a data protection context, eg, this means familiarizing students with various privacy enhancing techniques such as: authentication, deidentification, encryption, pseudonymization, anonymization, homomorphic encryption among others.⁷⁶ Moreover, it is important to understand how these technologies are applied in different real-world situations such as profiling, criminal investigations, facial recognition, deep fakes, digital health, scientific research, social media platforms, dark patterns, AI, distributed ledger technologies and smart contracts, among others.

By examining current real-world cases across different areas of technology, this learning activity outlines some of the main features of this ongoing transformation process, in particular the diverse privacy and data protection issues that relate to science and technology and how they could apply proactive legal thinking and design-thinking.⁷⁷ The goal is to map the evolution of these technologies and to find the best way of harnessing different cutting-edge technologies and, at the same time, reducing the ever-growing gap between new technology and data protection law.⁷⁸

Gamify learning

In a recent interview, tech entrepreneur and influencer, Elon Musk, said that we need to ‘gamify learning’ and ‘conventional education should be massively overhauled’.⁷⁹ This is in line with the future generation orientation advocated here. ‘Learning should not be a chore, but a problem-solving game’, as Musk put it. He

71 GitHub, ‘Juro-privacy/Free-privacy-notice: Open-source Privacy Notice Design Patterns’ <<https://github.com/juro-privacy/free-privacy-notice>> accessed 9 June 2021.

72 Juro, ‘Your Privacy at a Glance’ <<https://juro.com/#privacy-popup>> accessed 9 June 2021. For the full Privacy Policy, see Juro, ‘The Juro Privacy Policy’ <<https://juro.com/policy.html>> accessed 9 June 2021.

73 Juro, ‘Get Your Free Privacy Policy Template’ <<https://info.juro.com/privacy-policy-template>> accessed 9 June 2021. The text of the policy will need to be customized, and a credit with links is required.

74 For design pattern libraries, see, eg, WorldCC Contract Design Pattern Library <<https://contract-design.worldcc.com/>> accessed 9 June 2021.

75 Marcelo Corrales Compagnucci, Mark Fenwick and Helena Haapio, ‘Digital Technology, Future Lawyers and the Computable Contract Designer of Tomorrow’ <https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3908370> accessed 29 November 2021.

76 See, eg, Marcelo Corrales Compagnucci and others, ‘Homomorphic Encryption: The ‘Holy Grail’ for Big Data Analytics and Legal Compliance in the Pharmaceutical and Healthcare Sector?’ (2019) 3(4) *European Pharmaceutical Law Review* 144.

77 Marcelo Corrales, Mark Fenwick and Helena Haapio, ‘Digital Technologies, Legal Design and the Future of the Legal Profession’ in Marcelo Corrales, Mark Fenwick and Helena Haapio (eds), *Legal Tech, Smart Contracts and Blockchain* (Springer, Singapore 2019), 1–16.

78 Marcelo Corrales, Mark Fenwick and Nikolaus Forgó (eds), ‘Disruptive Technologies Shaping the Law of the Future’ in *New Technology, Big Data and the Law* (Springer, Singapore 2017), 1–13.

79 Elon Musk, ‘Education and the Need to Gamify Learning’ (8 March 2019) <<https://www.youtube.com/watch?reload=9&v=ctvib19wL4E>> accessed 10 May 2021.

mentioned the example of his own children and how he needed to ‘prise’ the game controllers from them, and this indicated how successful the games industry has been in capturing consumer attention.

By gamification, we mean the introduction of typical elements from games (eg, narrative and storytelling,⁸⁰ classes and roleplaying, levels and quests, competition and problem-solving, exploration and adventure, and a recognition of the power of the ‘flow’ experience) to other fields of human activity.⁸¹ We can learn a lot from the most successful games and game design. Companies like Epic—producers of the hugely successful Fortnite, eg—are masters at capturing and retaining user attention. And this is achieved by a combination of technology—games are software, after all—and human-centred design.⁸²

Moreover, developments in the gaming sector often pre-empt developments elsewhere in the economy and popular culture. Right now, for instance, there are important developments in VR gaming (where players use a virtual headset to play the game) and several major players in technology now regard VR headsets as the next big hardware technology post-smartphone. Facebook, eg, acquired Oculus, the producer of one of the leading headsets, and have bought smaller startups companies that produce games for these headsets.⁸³ Clearly, in making these acquisitions, key figures in Facebook signal that they believe that these technologies can be deployed in other contexts, most obviously for communication, for meetings, and education. The re-branding of Facebook as ‘Meta’ and Mark Zuckerberg’s emphasis on the metaverse similarly point to the significance of the gamification of everything.

Another example is blockchain gaming, in which games run on a distributed ledger. There are several interesting possibilities here, but perhaps the most intriguing are related to cryptocurrencies. Traditionally, in-game currencies have operated in-game only, but with a blockchain cryptocurrency it is possible for gaming currencies to be used ‘across’ different games and outside games in the real world.⁸⁴

The fact that so many large tech companies—Apple with its Arcade gaming platform and Netflix’s recent announcement that they will expand their gaming operations shows how gaming is increasingly shifting into the mainstream and the line between gaming and other sectors of the entertainment and technology industries is blurring.⁸⁵ Games are becoming much more sophisticated these days and understanding the world of gaming can offer powerful insights into near-future technology trends and cultivate skills that can be deployed in other non-gaming settings. In doing so, we must understand the different elements that make a game successful and think about how these might be deployed in an educational and legal context. This is a crucial exercise if we want to include more of these contemporary gaming ingredients in our courses, lectures, and presentations. In the same way that digital technologies from today are incomparable with those of 20 years ago, so are games and there is much value to be derived from engaging with gaming, particularly for understanding user-engagement.

This line of thinking confirms the ‘motivation and perceived locus of causality’ model presented by Ryan and Deci.⁸⁶ Motivation (extrinsic and intrinsic) is a fundamental aspect and driving force of any learning process. Facilitating incentives and engagement with others as part of the learning process is vital.⁸⁷ And this is where gaming techniques and activities can become useful as they give students the opportunity to work together in a learning-oriented way. In *For the Win*, eg, Kevin Werbach and Dan Hunter suggest that not only the gaming industry has to benefit from a greater time investment in understanding game design principles, but business and education also stand to gain. Interestingly, the authors of this book are both lawyers and they were forerunners in introducing the first course on gamification at the Wharton Business School. According to the authors ‘a well-designed game goes right to the motivational heart of the human psyche’.⁸⁸

By adopting a gaming mindset, we can see future opportunities and can deal with many of the digital and

80 Paula Toledo Palomino and others, ‘Narrative for Gamification in Education: Why Should You Care?’ in *2019 IEEE 19th International Conference on Advanced Learning Technologies (ICALT)*, 2019, 97–99.

81 Candace Figg and Kamini Jaipal-Jamani ‘Developing Teacher Knowledge About Gamification as an Instructional Strategy’ in Information Resources Management Association (ed), *Gamification in Education: Breakthroughs in Research and Practice* (IGI Global, Hershey 2018), 233.

82 See, eg, Steve Swink, *Game Feel: A Game Designer’s Guide to Virtual Sensation* (Elsevier, Burlington 2009); Ernest Adams and Joris Dormans, *Game Mechanics: Advanced Game Design* (New Riders, Berkeley 2012).

83 Jeremy Bowman, ‘Mark Zuckerberg Thinks You Will be Buying an Oculus Soon’ (*The Motley Fool*, 28 March 2021) <<https://www.fool.com/investing/2021/03/28/mark-zuckerberg-thinks-youll-be-buying-an-oculus-s/>> accessed 21 June 2021.

84 Eg, a leading player in this sector is Enjin: <<https://enjin.io/>> accessed 10 May 2021.

85 Nick Wingfield and Jessica Toonkel, ‘Netflix Seeks Executive to Expand Gaming Efforts’ (*The Information*, 21 May 2021) <[86 Edward L Deci and Richard M Ryan, ‘A Motivational Approach to Self: Integration in Personality’ in Richard Dienstbier \(ed\), *Nebraska Symposium on Motivation: vol 38. Perspectives on Motivation* \(University of Nebraska Press, Lincoln 1991\), 237–88.](https://www.theinformation.com/articles/netflix-seeks-executive-to-expand-game-efforts?utm=)

87 Richard M Ryan and Edward L Deci, ‘Self-determination Theory and the Facilitation of Intrinsic Motivation, Social Development, and Well-being’ (2000) 55(1) *American Psychologist* 68.

88 Kevin Werbach and Dan Hunter, *For the Win: How Game Thinking Can Revolutionize Your Business* (Wharton Digital Press, Philadelphia 2012).

design challenges we will have over the next 10 years. To survive and flourish in a video game or in a world of exponential technological change, students need to be inquisitive, creative, and bold. Students must retain an open mind and constantly experiment. This will provide them with the skill set necessary to survive and flourish in a digital age.

In making this argument, we do not claim that the world 'is' a game or that we should approach the world's most pressing challenges 'as if' we are playing a game. That would be irresponsible. Building the infrastructure of the future is a serious task. But we do believe that if you want to help make that world a better place, a gaming mindset can offer a huge advantage. Games can, if applied correctly, help students to retain more information.⁸⁹ Learning can be made a more intense and meaningful experience. We want our students to explore, experiment and deal with the immense uncertainties. We want our students to become legal engineers, architects, and designers.

It is for this reason we introduced a gamified 'legal design hackathon' experience into our legal education programmes. In one version of the hackathon, students are divided into teams, and they must search for privacy design patterns and the so-called 'dark patterns'⁹⁰ which are spread all over the Internet and often mislead consumers. Having searched and identified the dark patterns, they then must propose ideas how to solve the problems with such dark patterns. This learning activity can incentivize students. Like a game, they must walk through a sequential series of tasks or levels: find problematic cases, identify the issues, develop solutions in a team, and sell those solutions to a panel of experts. Incentives—a reward system, eg—are created by introducing a competitive element between teams at each stage and an awards ceremony at the end, and this can also create a more engaging experience for everyone.

Of course, it is also important to be aware of the potential challenges and caveats of gamification. Rewards, for instance, are one of the most important elements of game design—reward encourages users to stay engaged in a gamified context. However, despite substantial studies on game rewards in gamification, the optimum for timing and frequency of rewards is still unclear. That is to say, it is uncertain *how* and *when* we should

award students in the gamification process.⁹¹ Although extrinsic rewards can motivate and encourage positive behaviour, they can also have the opposite effect. Sometimes giving people a bigger reward to perform a certain task may make them do it less or worse.⁹² Education reformer Alfie Kohn published a book on this phenomenon titled *Punished by Rewards*.⁹³ In psychology, this is known as the 'crowding out' problem, because extrinsic motivators, such as rewards, tend to 'crowd out' intrinsic reasons for action (doing something because it has value in and of itself). Several research studies confirm that the crowding-out effect is real and that adding extrinsic rewards to intrinsically motivated tasks has proved to produce less effort and poorer-quality work. Consider the example of teaching children how to read or making them to do their homework. Parents and teachers employ all types of extrinsic motivators (punishments and rewards). The extrinsic motivator will often work initially, but it will dramatically stop producing positive effects at some point.⁹⁴ For this reason, gaming activities must be carefully designed in order not to fall into this reward paradox.

Create a 'safe space' for experimentation

The concept of the 'regulatory sandbox' has been used widely in technology regulation in recent years to describe a process of creating a safe space for controlled experimentation whereby startups are released from regulatory obligations that would otherwise apply, in exchange for handing over to regulators the data generated in the deployment of new technology in a real-world setting.⁹⁵ The collected data can enable regulators to better understand trends in the tech sector and make better regulatory choices, ie, a regulatory sandbox addresses information asymmetries that exist between public and private actors in the tech ecosystem. It also offers startups the opportunity to test innovative new products in real-world settings.

We believe that a sandbox can also function as an important concept or metaphor for education, as it highlights the importance of creating a space of controlled freedom within which students can deploy the skills described in previous sections.

An important feature of a regulatory sandbox is that it facilitates and encourages 'blue sky' thinking amongst all

89 Joan-Tomás Pujolà and Christine Appel, 'Gamification for Technology-enhanced Language Teaching and Learning' in Mariusz Kruk and Mark Peterson (eds), *New Technological Applications for Foreign and Second Language Learning and Teaching*, (IGI Global, Pennsylvania 2020), 104.

90 Rossana Ducato and Enguerrand Marique, 'Come to the Dark Side: We Have Patterns. Choice Architecture and Design for (Un)informed Consent' <https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3365952> accessed 10 May 2021.

91 For an empirical study about the timing and frequency of rewards for students in a gamification application see, Fan Zhao and Dahai Guo,

'Rewards in Gamification' in Xiaowen Fang (ed), *HCI in Games, First International Conference, HCI-Games 2019* (Springer, Cham 2019), 453–62.

92 Werbach and Hunter (n 88).

93 Alfie Kohn, *Punished by Rewards: The Trouble with Gold Stars, Incentive Plans, A's, Praise, and Other Bribes* (Mariner Books, Boston 2000).

94 Ibid 61.

95 Fenwick, Kaal and Vermeulen (n 17).

stakeholders in the ecosystem, notably startups and regulators. Startups are freed from some of the constraints created by legal risk and regulators are given information to implement more effective regulation and innovate in regulatory design.

Educators can learn from such an approach. Encouraging students to be more creative and experimental in thinking about future challenges for privacy is the last principle that we would highlight. This means encouraging students to examine ‘near future’ privacy issues in ubiquitous computing such as cloud computing, big data, autonomous vehicles, Internet of things, and wearable devices. In addition, other ongoing technological trends could be examined such as AI, robotics, and automation, blockchain technology, smart contracts, and quantum computing. Again, the key point is for such creative thinking to be connected to tangible instantiations of these technologies and a problem-solving, gamified approach.

Such a creative approach can also be applied to imagining future regulatory schemes. Here we would highlight two promising strategies for meeting the technological challenge taking the example of the AI developments in the Fintech sector. First, ‘dynamic regulation’, in the form of experimental regulatory schemes that aim to provide a space for responsible AI-related innovation. There is already evidence to suggest that jurisdictions that adopt a more proactive approach to technological regulation can attract greater investment.⁹⁶ The second strategy relates to so-called innovation ecosystems. It is often argued that such ecosystems are most effective when they afford opportunities for creative partnerships between well-established corporations and AI-focused startups and that this aspect of a successful innovation ecosystem is often overlooked in the existing discussion.⁹⁷ Students might be invited to consider these more experimental regulatory approaches and to identify privacy and data protection concerns that they may create.

Finally, students must feel safe to speak freely and constructive feedback should be provided. Peer feedback or peer review is at the core of many contemporary evaluation practices—students are assigned other students who will comment and evaluate both oral presentations and written assignments. This allows students to make the necessary changes based on the input they receive from their peers and at the same time develop capacities in business and legal judgment.⁹⁸ A crucial feature of a sandbox—either for

children or regulators and entrepreneurs—is that it offers such a safe environment for experimentation and a similar idea should inform the educational deployment of this concept.

Conclusion

The role and required skill set of lawyers is constantly evolving. This article views the lawyer of the future as a crucial intermediary operating in the flatter, multi-disciplinary teams of a digital age, working with technology to deliver human-centred solutions. To perform this function effectively, lawyers require a better grasp of the concepts and capacities of new technology, but also the principles of human-centred design. The lawyer of the future is likely to work as a member of a cross-professional team where it is not enough to simply know the law and be able to identify legal issues—it is also about collaborating with people from other disciplines and co-creating solutions that are operationally and legally functional.

The principles presented here are a first attempt to think about how course and programme design might better integrate these other perspectives into legal education, focusing on the issue of data protection regulation. It is not our goal to focus on how these principles might be implemented, although the agent of change is unlikely to be top-down (ie, driven by either public officials or university administrators) but is best driven by a partnership between legal professionals and university teachers. The identified principles emphasize a human-centric approach that seeks to promote successful outcomes and prevent problems before they arise. The merging of design with technology has the potential to transform the legal profession. It can help create new digital products and service and make legal information less complex. As such, legal education needs to shift away from a knowledge-focused approach towards a more forward-looking model focused on skills, rather than content. The task-oriented approach, including sandboxes and gaming active learning activities presented here, can help students to have a more meaningful experience by experimenting and engaging more directly with practical problems.

And as a final thought: we would tentatively suggest that these principles are transferable to other fields of law, particularly those fields that involve digital

96 Ugo Pagallo and others, ‘The Rise of Robotics and AI: Technological Advances and Normative Dilemmas’ in Marcelo Corrales, Mark Fenwick and Nikolaus Forgó (eds), *Robotics, AI and the Future of Law* (Springer, Singapore 2018), 8.

97 Mark Fenwick, Erik PM Vermeulen and Marcelo Corrales, ‘Business and Regulatory Responses to Artificial Intelligence: Dynamic Regulation, Innovation Ecosystems and the Strategic Management of Disruptive

Technology’ in Marcelo Corrales, Mark Fenwick and Nikolaus Forgó (eds), *Robotics, AI and the Future of Law* (Springer, Singapore 2018), 81–103.

98 Naomi Winston and David Carless, *Designing Effective Feedback Processes in Higher Education: A Learning Focused Approach* (Routledge, Abingdon 2020), ch 8.

technologies and where meaningful and effective engagement with end users—either business or consumers—is vital.

<https://doi.org/10.1093/idpl/ipac012>