Chapter 9

**Legal education meets computer science: an interdisciplinary approach to teaching LawTech**

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# **Introduction**

The Solicitors Regulation Authority have introduced an Innovation Space or ‘regulatory sandpit’ to encourage the innovative application of technology to the delivery of legal services in England and Wales (Solicitors Regulation Authority, 2019). This is a reflection of an increasing recognition throughout the legal profession of the importance of innovation and technology. The Law Society Report, The Future of Legal Services (Law Society 2016) reviewed the likely impact of technology and other factors on the legal services market from 2020 onwards. Its predictions include greater flexibility of work and employment contracts; an increased number of diverse business models; and, the development of an hourglass shaped employment market, with technology hollowing out the middle of the workforce, resulting in an increased use of paralegals, fewer trainee and newly qualified positions and increased competition for senior roles. See also their more recent report, Horizon Scanning: Digital Futures (Law Society, 2020). There is therefore an urgent need for Law Schools to recognise and respond to the likely impact of these developments on the legal career choices of their current and future undergraduates.

The initial spark for the development of our law and technology option was a presentation at the Legal Education, Legal Practice & Technology Conference, organised by the Centre for Legal Education, Nottingham Law School in June 2017. One of the presentations showcased a predictive analytics tool, Case Crunch, developed by Ludwig Bull and fellow Cambridge University students. It aimed to correctly predict the outcome of European Court of Human Rights cases based on the fact summaries contained in the judgments. Case Crunch was then put to the test in a challenge with working lawyers to see who could most accurately predict the outcome of payment protection insurance claims based on the relevant law and short fact summaries. At the end of the challenge, Case Crunch had a better success rate than the lawyers by 86.6% to 62.3% (Case Crunch, 2017). There is a debate as to whether this demonstrated that artificial intelligence (‘AI’) could outperform lawyers in their own field of expertise or whether the trial was inconclusive, involving untested methodology. Critics asked how expert and diligent were the lawyer volunteers and whether post facto case summaries give subtle clues to the decision and reasoning in the case. Whatever the answer, we were alerted to the rapid pace of developments in the application of technology to law and legal services.

# **Digital empowerment through LawTech**

## ***Student employability***

Three decades of predictions by people such as Richard Susskind (see Susskind, 1987, Susskind, 2017 and Susskind and Susskind, 2017) seemed to be turning into facts. We could see that automation was already changing lawyers’ roles and that AI was likely to have an even greater impact. For example, technologies such as Kira Systems (<https://kirasystems.com/>), Luminance (<https://www.luminance.com/>) and LawGeex (<https://www.lawgeex.com/>) can conduct due diligence, discovery and contract review faster, cheaper and more accurately than lawyers can and are receiving investment (Artificial Lawyer 2019, 2020). Loss of work to automation will mean fewer training contracts and junior lawyer positions, particularly in the large commercial city law firms. The rapid growth of lawtech start-ups is best captured by the Legal Geek Start Up Map (Legal Geek, 2019), showing over 250 start ups and 15 larger, more established ‘scale ups’ across Europe. One global law firm reacted by setting up a tech incubator in 2017, giving start-up firms space within its London office to work on projects “to explore, develop and test legal, regulatory and deal-related solutions” (Allen & Overy, 2020). Large City firms have also started to recruit trainees to work in the lawtech area (Legal Cheek, 2018). Barclays also support a lawtech start up incubator in London’s Notting Hill Gate (Barclays 2021).

We are not anticipating the replacement of lawyers by technology, but we have joined those predicting that technology will play an increasingly important part in the delivery of legal services with significant changes to lawyers’ work as a result. The implication is that students studying law today are preparing for different roles and careers than those of their predecessors. Susskind predicts the emergence of a range of new legal roles including legal knowledge engineer, legal technologist, legal hybrid, legal process analyst, legal project manager, legal data scientist, R&D worker, ODR practitioner, legal management consultant, legal risk manager (Susskind, 2017, Table 13.1). These roles will require additional knowledge and skills compared to what is generally offered on traditional law degrees. Susskind (2017) argued that this is something that law schools need to address urgently.

We considered what additional skills and knowledge might be needed to empower our students to survive and thrive in a rapidly changing environment. Given the potential for integrating technology into the delivery of legal services, it seemed obvious that students need greater experience of project management and working in cross-disciplinary teams. Familiarity with technology and how technologists work is essential to avoid misunderstandings in cross-disciplinary work. Budding legal technologists also need to understand the importance of legal design. The challenge is to bring together the existing technology and legal expertise in ways that are helpful and easy to use for clients, especially vulnerable clients. This is the domain of good legal design. Like many others, we have been inspired by the work of Margaret Hagan, particularly Law by Design (Hagan, 2017), her blog (<http://www.openlawlab.com/>), her website (<http://www.margarethagan.com/>) and the Stanford Legal Design Lab (<http://www.legaltechdesign.com/>).

## ***Access to justice***

We are a community law school with a strong commitment to social justice, including our Legal Advice Clinic (LAC) (see <https://www.lsbu.ac.uk/about-us/facilities/lsbu-facilities/legal-advice-clinic>), opened in 2011, which offers a drop-in service where students give immediate, face to face supervised advice on social welfare law problems; principally housing, employment, welfare benefits, family and debt. Undergraduate students volunteer at the clinic as an extra-curricular activity but may use the experience as a placement for their core ‘Working in the Law’ module, which is partly assessed by a reflection on a period of legal work experience. We have assisted nearly 3000 local people, trained nearly 300 student legal advisors and collaborated with a large number of solicitors and advice agencies in our local legal advice network. Our students also volunteer at other advice providers across London and we have developed helpdesks for local courts, offering support to litigants in person.

We chose to concentrate on access to justice projects because of our expertise and interests but also because social welfare law has been largely ignored by the initial wave of lawtech start-ups, who have concentrated on the potentially richer pickings of commercial law applications. In addition, as a result of the Legal Aid, Sentencing and Punishment of Offenders Act 2012, it is now virtually impossible for people to obtain early social welfare law advice from a lawyer paid for out of central public funds (see eg Legal Action Group, 2020). This is despite a wealth of research evidence demonstrating that early intervention in social welfare law problems can avoid social and economic costs down the line, whilst unresolved social welfare problems impact adversely on health and well-being (see eg Drummond & McKeever, 2015).Early social welfare law advice is precisely what we offer LAC clients, though the enormous demand outstrips our capacity. LAC records show that the commonest problems people approach us with are housing and employment, so we started there. Could we use technology to assist and empower our clients whilst at the same time improve our students’ future career opportunities?

# **Designing and delivering the module**

## *Interdisciplinary and collaborative approach*

Whilst we now know that lawyers don’t necessarily need to code (for the debate on this topic see, for example, Lawtomated, 2019), we didn’t know that when we started and so, as none of us could code, we approached a colleague in computing. She was enthusiastic about collaborating, particularly because we could provide real clients for her students’ project work. We held a hackathon (a time limited design and programming challenge) to explore how to work together, putting law and computing students into teams and asking them to solve problems set by law staff, mainly practising lawyers as well as academics, including some working in our Legal Advice Clinic.

At the conclusion of the hackathon we felt that we knew what we wanted to do: to adopt a collaborative and practical approach to teaching law and technology. We also had adapted a tool used on our Family Court Help Desk and created an automated form to help litigants in person (LiP) prepare for a First Hearing and Dispute Resolution Appointment (FHDRA) (Practice Direction 12B – Child Arrangements Programme, para 14.1, 2014). This tool indicates what information the judge will require at the hearing and allows the LiP to find and record the information in advance and then print it or send it to the court. It assists both the client and the court by ensuring that the LiP is prepared for the hearing.

## *The law and technology module*

Our computing students are taught and assessed over several modules based around projects and group work. This fitted in well with the law division’s engagement with experiential learning and clinical legal education. We created a law and technology credit bearing module as an option for final year LLB students. It runs in parallel with a mandatory final year project management module for the computer science undergraduates. We have adopted a collaborative, cross disciplinary approach, putting law and computing students into working groups of 5 or 6 members and teaching and assessing them together. The groups are encouraged to adopt an agile project development methodology called "Scrum" (Cadle & Yeates, 2017), which enabled students to work closely with their clients, holding regular face to face meetings to review development progress and get feedback. This methodology aims to ensure flexibility in the design process to accommodate changes requested by the client throughout the project. This is particularly important as the projects are innovative and the clients themselves didn't know exactly what they want until they start to see the ideas being generated by the teams and can respond.

Given the variety of projects (as noted below), the teams have to research and evaluate technologies available before choosing the most suitable tools for implementation. The choice is influenced by the project requirements and its required features, as well as the tool's ease of use and students' existing expertise with the tools.

As time and resource did not permit us to teach law students to code within this module, we initially thought to use one of the available no/low code development platforms which allow expert systems to be developed without coding. (We used Neota Logic (<https://www.neotalogic.com/>) and Outsystems (<https://www.outsystems.com/>) and have also looked at Josef (<https://joseflegal.com/> ) and Bryter (<https://bryter.io/>).) However, contrary to our initial expectations, they were not popular with our students, mainly because no/low code systems have fairly steep learning curves (20 hours plus). The computing students preferred to use tools and systems they were familiar with and the law students were mostly happy to take on legal design and project management roles. Institutionally, intellectual property issues and the cost of hosting finished tools and resources are other factors mitigating against the commercial no/low code systems. Nonetheless, there are also potential advantages to no/low code solutions, primarily that law students can use them to explore the design and development of lawtech without having to learn to code or rely on others to build their designs, so we will continue to explore them.

The traditional "full code" development technology stacks (data structures) preferred by the computing students included the following key technology layers:

* **HMTL** and **CSS** required when creating websites, where HTML is used to create the basic structure of the web application and CSS to add formatting and layout.
* A **programming language** such as **JavaScript**, **PHP** and **Python**, which is used to program the functionality and add interactivity to the website/application.
* A **database**, such as **MongoDB**, **MariaDB**, **QSLite**, **Microsoft QSL server**, **PostreQSL** which is required to store data for the created applications.
* A **server/web hosting**, such as **Nginx** or **AWS**, which is needed for the user to access the application services over the internet, normally through their internet browser.

In addition to these core layers of "full code" technology stacks, developers often choose additional tools to make the development faster through reusable code and other helpful tools and services:

* A **framework/Content Management System**, such as **Django**, **Drupal**, **Wordpress, Framework7** or **React.js** which makes development faster through reusable code and enable non-technical users to add content to the site.
* **Development environments** such as **Android studio** and **Visual studio**, which offer tools and services for developing applications.

We weave classes on law and technology, legal design, access to justice, group work and project management, including talks by practitioners, around the lab-based group work, on a weekly basis. We want our students to encounter the uses of technology and to develop practical professional skills, rather than reading about them. There is an initial formative task, student teams are given a small legal design project, presenting user-friendly terms and conditions for a new social media app, which gives them experience in working together as well as an understanding of legal design. Students then move on to the main project, which is the basis of their final assessment: each group is assigned a client and a brief to develop a piece of lawtech software.

Students are assessed by two pieces of coursework, an individual reflective essay on careers and skills and a presentation and a written report. The latter is group work, with which the computer scientists are familiar but which is a novelty for the law students. With student involvement, we have devised a method to address the problem of the free-rider without undermining the collective responsibility for the outcome of the project work, which we feel is an important employability lesson. Students evaluate their fellow group members on a scale of 1-5 under five headings (attendance, contribution, completion of tasks, co-operation and listening and participation). The group work mark is then adjusted for each student depending on their personal score in relation to the average score.

# *The projects*

There are usually around fifteen teams, each of which requires a client. Law staff (outside the core teaching team) are an invaluable resource as clients, particularly those involved in our clinical legal education activities. In addition, we invite local lawyers to volunteer as clients, giving them an opportunity to develop their own thinking on if and how to adopt lawtech into their practice. We have also worked with members of the anti-racism organisation The Monitoring Group (<http://www.tmg-uk.org/>). The clients do not take part in the assessment of students, although they observe the final presentations by their groups.

The clients bring their own project tasks. One team of students was asked to develop a prototype for a website/smart phone application which would explain the duties owed to homeless and poorly housed people in our local authority area (Southwark), how to apply to Southwark for social housing and sources of face to free face independent housing advice in Southwark (in addition to our LAC). Another team worked on a website/app for tenants facing eviction on the basis of rent arrears. The brief was to help tenants self-assess for eligibility for legal aid: if they were eligible, to connect them with local specialist housing solicitors in advance of their court hearing; if they were not eligible, to help them collate all the information they would need to present to the court duty solicitor at their hearing, if there was a duty solicitor, or to represent themselves effectively, if there was no duty solicitor. A third team worked on a website/app that described basic employment rights, including wages, holidays, notice and unfair dismissal, and signposted clients to local face to face sources of employment advice. A fourth team were tasked with finding a solution to help local people to find a lawyer. A local solicitor provided the brief to create a chatbot which might be integrated with the local law society website, though in the end the students persuaded their client that a web-based system would be more effective and a working prototype was produced, intended for use by accredited lawyers specialising in domestic abuse cases. The team working for The Monitoring Group were asked to design and build a prototype app for reporting incidents of racism that could also provide out of hours advice and referrals to local lawyers and community groups for further help.

The student teams quickly grasp they have to distil large amounts of complex information into simple, accessible (but accurate) bite-sized pieces of information and, despite the difficulty, their final designs are generally useable, intuitive and accessible. Projects can be repeated both in the same year and in the following year. Different teams may come up with different approaches and strategies, which is a valuable contribution to the access to justice aspect of the project. The limitation of the exercise is that there is only time to design a prototype, as developing a full application generally requires more time and effort than the module allows.

# **Future readiness – new skills and new roles**

Introducing any new module carries potential risks and rewards for academics and students alike. When the content, the context, the teaching methods and the skills required are all new and the module is being delivered by two completely different disciplinary teams to final year students from both disciplines working together in teams, the stakes are even higher. The modules (separate for law and computer science) had to be approved by not one, but two, internal committees and aligning learning outcomes and assessment criteria was a delicate task. The law students were stepping away from traditional legal topics into an unfamiliar world, which, for final year students, carries some risk. That said, the initial results have encouraged us to continue and expand our collaboration and our engagement with lawtech.

Aoun (2017) argues that a new discipline of ‘humanics’ will be required for the digital age. In addition to the ‘old literacies’ of reading, writing and mathematics, graduates in the future will need data literacy, technological literacy and human literacy (humanities, communication and design). These skills will be coupled with “a set of cognitive capacities”: systems thinking; entrepreneurship; cultural agility and critical thinking.

Our new module begins to introduce law students to new ways of working with data, perhaps selecting appropriate data to use on an information and signposting website, planning how to capture and present data for a racism monitoring app or ensuring that sensitive data is appropriately managed. For the first time in some cases, law students see under the technological bonnet. The emphasis on access to justice and legal design inculcates new ways of thinking in both law students and computer science students. Designing a user-centred product and communicating clearly, whilst understanding the political, social, economic and legal context is human literacy of a high order. We think that legal design is an important future skill, and a useful tool for legal education. It requires students to imagine the needs of diverse legal clients and to break down legal solutions into algorithms (sets of simple rules) that can be automated by lawtech. Our module may also be the first opportunity for law students to encounter systems thinking or entrepreneurship. External and internal clients have noted how students thought creatively about the problems they presented. Although Aoun situates cultural agility within ‘varied global environments’, it is arguable that working across disciplines can also enable students to develop the necessary flexibility. Whilst critical thinking skills are essential throughout legal education, particularly in the final year, a module such as this offers plenty of opportunities to use them in a real life and practical context. Finally, the computing students now know a great deal about housing and employment and other rights. They also understand how the law might be used to resolve the problems that they as well as local citizens may face. One unforeseen benefit of the module’s inter-disciplinarity is its potential for engendering awareness and, it is hoped, social activism in the student body: not just in our law students but our computing students too.

The module is unusual, at least in legal education, in its use of expert clients, both internal and external. In the clinic or on the court helpdesk, clients are lay people who are reliant on the clinic or helpdesk team for their legal knowledge. Simulated lay clients have also been used for assessment purposes in professional skills competences in various disciplines (see eg Barton et al 2006). Simulated clients have no long-term contact with the students and no genuine relationship is developed. The situation is purely artificial and designed purely for the purpose of testing one or more professional skills, and clients may be assessors (see however Paul Maharg’s simulated client initiative (Maharg, 2019)). In our module, the clients put forward a genuine problem and hope for a prototype which might eventually contribute to their legal practice. In this respect, students and the clients are partners and co-producers in the process (see Healey et al, 2014). The clients could not produce the software without the students, but the client input is essential to the project as well. Just as the law students in the team have to learn fast how the tech world operates, so do the clients. For example, for lawyers it is enlightening to be present at the start of a “stand up”– a way of starting a sprint meeting where everyone stands up to report on progress (Techtarget, 2019) – for the speed and focus that is provides. Lawyers and legal academics gain an insight into this and from other project management techniques taught on the module. This exposure is a further benefit of an interdisciplinary module.

The first presentation of the module was in semester 2 of 2018-19. The 2019-20 presentation was well underway in March 2020 when UK university teaching went online because of the Covid19 pandemic. The rest of the module was taught online. At the time of writing, the 20-21 presentations are also likely to be online.

Despite the well-documented problems of the move online, the module proved resilient under pressure. Students were interested in and involved in technology anyway so there were fewer issues of access and aptitude. Groups and relationships were already established by the time of the lockdown and the team projects were just starting in earnest. For the experts, online meetings were easier in some ways as there was no travel time and slightly more flexibility. It was also easier to view the work in progress on a shared screen in Microsoft Teams rather than huddled over a student laptop.

The more important lesson to be drawn from 2020 was that the changes to the legal system and legal practice identified earlier in this chapter are coming and their arrival has been significantly accelerated, making it all the more important to ensure that our students are ready to meet the challenges of the digital age.

# **Conclusion**

We believe we have begun to develop an exciting, innovative and relevant new course, one that addresses employability and justice as well as legal learning and the development of professional skills. The collaborations between disciplines and between the law school and local lawyers have been vital in pursuing these aims. We have also begun to engage with the emerging lawtech community across the UK, with practitioners coming to the University to share their experience. We hope that individual projects will be developed further, perhaps using students as paid interns or as part of postgraduate study, and contribute to the development of a national suite of lawtech access to justice resources. We see a clear potential for technology to expand the reach of the currently very limited resources available to address unmet legal need in the community, not by replacing lawyers, but by assisting clients so that they need to spend less time with experienced practitioners to get the help they need. There is currently an attempt to provide more co-ordination and collaboration between all those interested in and experimenting with lawtech and access to justice. One such network is the Network for Justice – the Access to Justice Foundation, see [www.atjf.oeg.uk](http://www.atjf.oeg.uk), led by the Litigant in Person Network (<http://www.lipnetwork.org.uk/>) and Rightsnet (<https://www.rightsnet.org.uk/>). Resources for Law Schools include the Lawyering in a Digital Age Conference (<https://www.digitallawconference.uk/>) and plans for an international network to support teaching and research into the future of law. Our next steps are to seek modest funding to try and develop the best of our student projects into prototypes and MVP (minimum viable products). We are also beginning to receive enquiries to use our students as alpha (early) testers of lawtech prototypes, such as the Access Social Care Chatbot (see [www.accesschairty.org.uk](http://www.accesschairty.org.uk)) which is win-win for the developers and our students.

In conclusion, we have found rich potential for future collaborations involving law, computing science, the Legal Advice Clinic, local lawyers, lawtech start-ups and the emerging access to justice law tech community. It is by no means the only way to teach the many varied aspects of law and technology but is it is fruitful, accessible and easily adaptable to an experiential/clinical legal education teaching philosophy.

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