

Enhancing the Learning Experience through EdTech

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Using Technology as a Tool to Enhance the Learning & Teaching Experience, Developing Interactive Learning Materials

When we see our students facing challenges and difficulties, our team at IE Publishing together with our faculty are there to support the learning process of each student and improve their experience. Our team's objective is to identify these difficulties and find suitable as well as effective learning solutions. We are constantly researching, enhancing and implementing new trends in order to offer innovative as well as dynamic ways of learning for our students.

In 2001, IE Business School took the initiative to create its own e-learning department with two well-defined purposes: on the one hand, to launch an online MBA, which today occupies the first positions amongst various online MBA rankings. This step later became a greater initiative that today holsters many more online master's programs at IE University. This has evolved, and now face-to-face programs also include learning experiences that are supported by technology. On the other hand, the second purpose of the initiative was to develop multimedia case studies, tutorials, simulations and games that could be used in our higher education programs. These resources would provide great value for the learning, the teaching experience and student engagement.

It has been almost twenty years, and the initiative has evolved. Regarding the second purpose; the development of learning material. This work has been assigned to a specific department created in 2015 under the name of "IE Publishing" (more information can be found at: <https://iepublishing.ie.edu/>). This unit develops an array of digital content including multimedia material, Massive Open Online Courses (MOOCs), other online self-paced courses and traditional text-based case studies. IE's publishing department also encompasses its own library, which includes curated digital content known as Online Learning Journeys, which mainly focuses on corporate needs. In addition, the department has recently launched the Tourism Online Academy, which has been created in partnership with the United Nations World Tourism Organization (UNWTO). In this article, we will share our vision on our experience and the results obtained in what has been almost twenty years of developing interactive learning materials.

TYOLOGY OF LEARNING RESOURCES

Multimedia materials developed at IE Publishing follow the business school's teaching methodology. The idea behind this is that technology helps cover subject matter that may be complex and it can also be used to complement theoretical concepts in order to make better use of time in class. This is one of the main advantages of these types of resources, which is making the learning process more effective.

When developing multimedia materials, multiple resources that include different pedagogical models can be used. Practical exercises with feedback are examples of this which include interactive graphs, animations, surveys, questionnaires, role plays, drag and drop exercises, numerical based exercises, audio extracts, video interviews, explanatory videos, process videos, virtual tours, podcasts and many more.

IE has developed more than 200 multimedia materials that are used within the university itself as well as other universities, business schools and in-company corporate trainings. In that sense, the classification of materials developed at IE Publishing are as follows:

MULTIMEDIA OR INTERACTIVE CASE STUDIES - IE Business School is an institution that uses the case study methodology in its classes. The publishing department follows the motto of learning by doing. Students analyze a specific company's challenges that are then discussed in class under the guidance of a professor. This methodology has been proven to be highly effective.

Multimedia or interactive case studies can perfectly complement traditional text-based case studies with the use of technology. A case study is a 'photograph' of a company at a given time. It raises problems or dilemmas that a company faces; opening up debate about the situation and possible solutions which can be discussed in class. As already mentioned, in some case studies the multimedia version complements the case study on paper (which can also be a pdf file). With other cases, the multimedia material is the only one that students must prepare to go to class. Multimedia and interactive cases normally include videos, animations, exercises, interactive graphs and on some occasions simple simulations.

An example of an interactive case is "Ikea: Global Brand Communication". This case transports students from the classroom straight into the IKEA showroom, detailing a brief history of IKEA and focuses on the communication strategy used by the brand. It has an emphasis on "IKEA Iberia" and its decisions in the Spanish consumer market comparing it to four markets: China, Germany, Russia and the US.

The case is separated into four sections, each section being a specific area of an IKEA showroom (e.g. living room, kitchen, bedroom and payment area). In each room learners obtain information, watch videos and take part in activities by clicking on pieces of interactive furniture. In the first room; the living room, students get to know IKEA as a brand, their history, values and performance. Next is the kitchen, where participants learn about IKEA's relationship with consumers around the world. This section includes interviews with IKEA customers from various countries, different pieces of communication and branding used in these countries. In addition, it includes an interactive brand sentiment matrix. In the bedroom part of the showroom, students are given a view of IKEA's relationship with the Spanish consumer market. Here students can see relevant statistics and data related to IKEA Iberia both from public sources and exclusively from IKEA Iberia themselves. Some of the most valuable material in this case can be found here, with exclusive interviews from IKEA Iberia's Marketing Director as well as their publicity agency McCann. Finally, students can review the takeaway points and see final thoughts from the professor as well as the author of that particular case.

A video presentation of this multimedia case can be seen in the following [video](#). A description of this case can be read on the following webpage: [IKEA Global Brand Communication](#).

INTERACTIVE TUTORIALS – these teach one or several theoretical concepts that are later discussed and conveyed in detail in class. This helps to create a threshold of a concept, so that all students come to class prepared with the bare minimum knowledge of a concept. In other situations, tutorials are also used after the class, so that students can practice what they have seen in class.

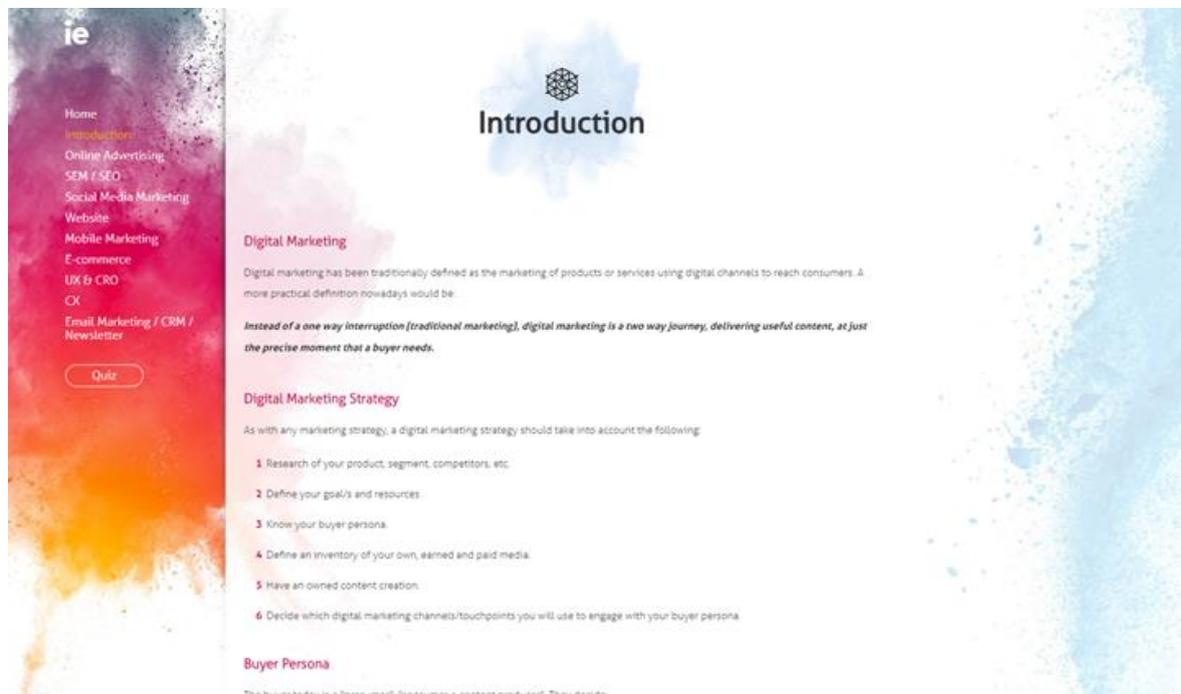


Figure 1, Image for the Tutorial on Digital Marketing, Social Media and Mobile Marketing:
<https://iepublishing.ie.edu/en/digital-marketing-social-media-and-mobile-marketing>

There are a wide range of interactive tutorials in all academic areas, such as finance, accounting, marketing and information systems and technologies.

GAMES AND SIMULATORS - these types of materials can be developed in order to be used individually, in a group or in a network (with several participants/groups competing or collaborating at the same time).

Simulations are developed for students to apply their knowledge in a non-risk environment. On many occasions, they are developed using competitiveness as a way of engaging students. However, simulations that promote collaboration among participants can also be developed so that the result of a game is the overall result of all participants.

In our experience, this type of content is highly valued among students. Some alumni still remember simulations they participated in five years back. Many mentions this is the highlight of a specific course.



Figure 2, Students playing a multi-player simulation at IE University.

An example of a multiplayer simulation is ‘‘Making Money on Oil’’. A video presentation can be seen here: [Making Money On Oil Multiplayer Simulation](#). This is a multiplayer simulation that IE developed in 2009 and it has been revamped and upgraded three times since its development. Thousands of students at IE and other academic institutions have played this simulation in class. Author and IE Professor Gayle Allard commented:

‘‘Students understand the theory of supply and demand, but often neglect its practical application’’.

On the other hand, one student from an Executive MBA program added:

‘‘This was incredible! The best class all week! Thank you for the interactive fun’’.

The simulation is based on the petroleum futures market. In each round, students watch a video news report and then have to decide how the news events will affect the future price of oil; applying the supply and demand model. After taking their positions in the market and submitting their decisions, a second video provides feedback and shows them what has happened. Students then see their gains/losses and how the results have affected their standing in the class leader board. This particular simulation fosters competitiveness in class which is a common characteristic of MBA students. Even though it includes a leader board and a ranking, the environment created is positive even for those occupying the bottom positions due to the good learning environment the simulation generates. It is important to mention that implementing rankings and leader boards have to be used cautiously due to the fact that it can discourage students occupying low positions.

VIDEO AND INTERACTIVE CONTENT – as our collection at IE Publishing continues to grow, we have single pieces of content that professors use in class. Since we develop extensive video content for our Massive Open Online Courses and our online executive education courses, we share these videos for professors to use in class. For example, videos of specific concepts, real life examples or interviews are often used in class to add value and enrich the student experience. Professors can share these videos with students before, during or after sessions.

In this sense, there is another type of online learning material IE launched recently which is called Online Learning Journeys. These journeys are structured from hand-picked resources that include a variety of formats including interactive tutorials, videos, expert interviews, articles on latest tendencies, podcasts and quizzes among many others. Videos are an important part of these online trainings which have been used as pre-programs or as training based on corporate needs. Every journey has been designed by an IE professor and they also include learning resources authored by others IE faculty members.

BEST PRACTICES WHEN DEVELOPING INTERACTIVE MATERIALS

Learning materials supported by technology are effective due to the application of specific practices. From our experience of developing hundreds of interactive materials for business education, these practices for development include the following:

HIGH INTERACTIVITY - interactivity is one of the key elements of success when it comes to developing multimedia content, in fact more and more of these types of learning resources are called “interactive materials” instead of multimedia materials. Interactivity helps retain content longer and to practice, allowing the learner to process and apply what they have learned in a more effective way. Some examples of interactivity include the following:

- **Feedback and exercises with feedback:** providing instant feedback when it comes to online learning content is essential for the learning experience. For example, when solving an exercise in which the learner receives feedback on a decision made or on an input given, the resource informs when the answer is correct or incorrect. It gives guidance after the decision and in some cases, it gives advanced explanations or opens new options for decision making. Feedback helps facilitate understanding of the right use of concepts and helps information retention.
- **Decision-making and simulations:** these resources can be included as part of a multimedia case or in a tutorial for students to apply their knowledge or they can be the learning resource per se, as seen previously in this article. Simulations also allow the introduction of gamification elements in class. An example of this is a network decision-making game in which the decisions of one team affects those of others. Another example is a network simulation in which a ranking encourages competitiveness among participants.
- **Roleplaying:** this is another form of interactivity which increases engagement. In a case study which was recently developed at IE Publishing, there is a story of a fictitious brewery that is facing entrepreneurial challenges. The learner is required to actively make decisions as a member of the brewery and see the outcomes of those very decisions. In this multimedia case, students enter an immersive experience where they take part in the challenges that the company is facing. To illustrate the situation, actors were hired and they talk to the camera when the student has to make a decision.

Another example is ‘‘Innovation Island’’ that has been created to facilitate a practical in-class learning journey for instructors focusing on various strategic and leadership themes, such as leadership intelligence, collaborative innovation, design thinking and scenario planning. The situation presented to students is as follows: after a plane crash, learners are stranded on a deserted island together with limited resources and an abundance of dangers. Using lessons from the professor, survivors must work in groups to develop a prototype that will assist them in confronting at least one particular uncertainty that jeopardizes their survival on this unforgiving island. A video presentation by the author of this tool can be watched here: [The Innovation Island Interactive Simulation](#) and a description can be found [here](#).

- **Storytelling:** this is another form of interactivity dramatically increases engagement. In a particular multimedia tutorial about digital marketing, social media and mobile marketing, the story of Maria; a young newlywed organizing her honeymoon trip entirely online is shared. The story is narrated through animations and it demonstrates how she interacts with the different digital marketing channels at every stage of her search. Storytelling helps learners engage in a personal way. They empathize with the character and remember the facts in a more natural way. With the previous examples given in this article, the reader can see that storytelling has been an important part of the learning experience.

Interactivity allows you to put into practice the famous proverb that says:

‘‘Tell me something and I will forget it. Show me something and maybe I will remember it. Make me a participant and then I will learn it’’.

In other words, technology allows us to apply a ‘‘learning by doing’’ approach.

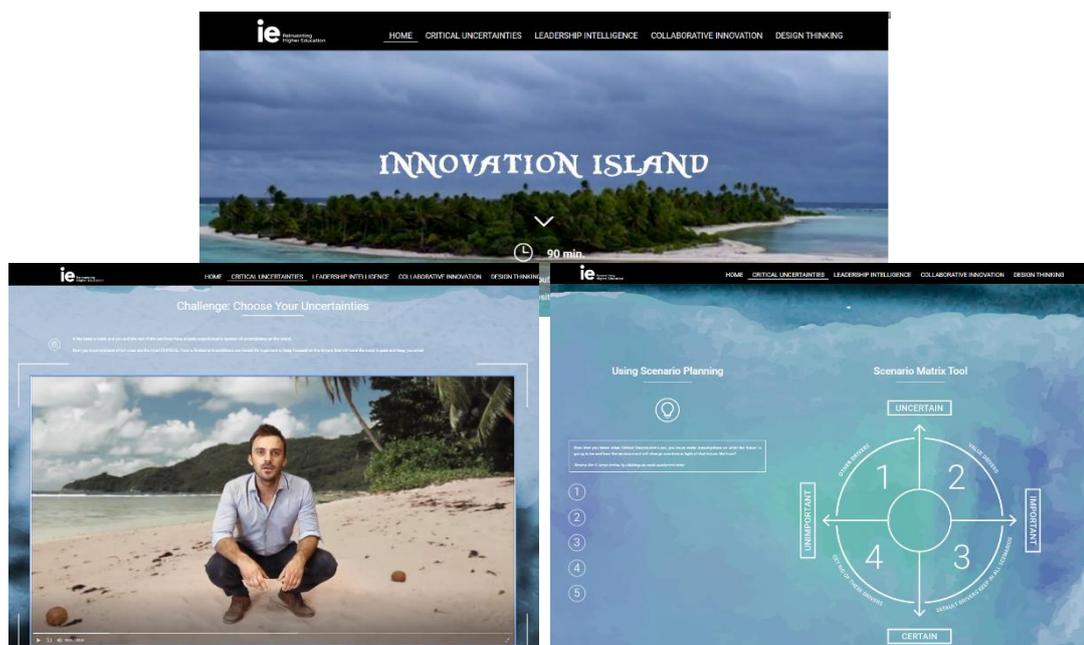


Figure 3, ‘‘Innovation Island’’ in an in-class dynamic supported by technology where students apply concepts related to innovation management such as scenario planning, defining critical uncertainties and design thinking. It shows examples of the use of storytelling and roleplaying.

- **UX/UI** - The user experience and user interface design are fundamental elements when developing digital educational content. Navigation must be intuitive and comfortable. Navigation, menus and buttons must be easily recognizable. It should invite the learner to continue reading and find out the next step.

Hidden navigation should be avoided. The users do not want to become frustrated and they need the experience to be easy and simple. Paying attention to UX/UI will help ensure that the user is focused on learning effectively and that other elements of the learning material are not distracting. As these materials are developed by IE Publishing, it is important to provide brand cohesiveness with IE University, with the correct use of logos in the material as well as in audio-visual elements.

APPROPRIATE DESIGN OF SCREENS:

- **Graphic images:** the way of presenting content has gained importance together with the size of the screen. When it comes to designing learning materials, it is important to avoid distracting or overwhelming the learner. For this reason, it is key to achieve a balance, ensuring that screens appear light so that the user is comfortable learning in front of a computer or any other device. The color tones used in each multimedia material must also be evaluated and selected using criteria; guaranteeing a good text/background contrast.
- **Content display:** avoid excessive text on the screen. For long texts, it is better to attach downloadable text or to find other solutions. Text placed on the left side of the screen as well as on videos must use font sizes and line spacing that are suitable for reading. Avoid developing the “read and click-on next” type of online learning materials since they can be substituted with a regular pdf file.

Apart from the above, it is advisable to present on the first screen a brief introduction of the content and the estimated time it will take the user to study it. This way the user can choose the best time to do the material. If it takes more than an hour, it should give the user the possibility of saving their work and resuming it at a later time without losing the progress that they have made. When work is resumed, sections which have (or have not) been seen would also be indicated.

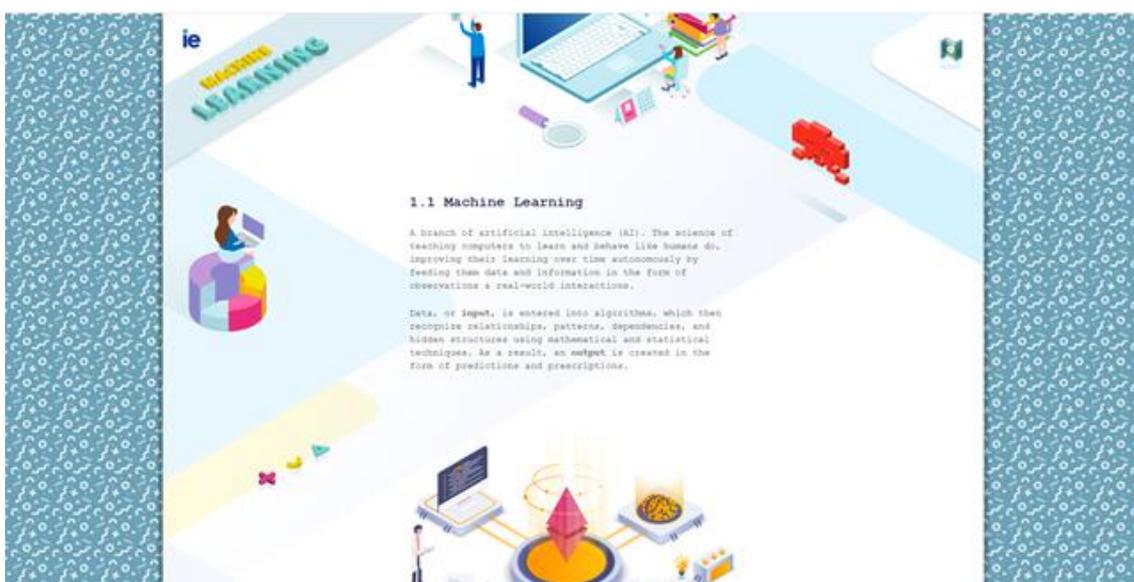


Figure 4, Visuals of the tutorial on Machine Learning
https://iepublishing.ie.edu/iep_en/machine-learning

ADVANTAGES OF USING INTERACTIVE LEARNING RESOURCES

There are many advantages of using these types of multimedia resources as part of a management course at both bachelor and master program level. These benefits can be seen from the perspectives of both professors and students. In the following section, some of these advantages are presented.

Interactive learning resources allow students to access material whenever they have time and students can also access the material using different devices. In addition, interactive learning resources allows students to experiment and make decisions in a controlled & simulated environment. This is crucial in the business of higher education when the model pursued is immersive and practical. Our interactive materials complement the discussions in the classroom which make the class dynamic, enriching and effective.

Related to the previous point, interactive learning resources also enable users to receive feedback in response to their actions or decisions instantly in an interactive way. If the student gives an incorrect response, it does not necessarily mean that they have failed, but instead the tools allow the user to make mistakes and learn from them. This is because case studies do not have unique solutions and must instead generate reflection, decision-making, pro and con analysis, as well as discussion under the moderation of a professor.

These resources also allow the use of personalization and learning analytics as part of the learning process. Technology can support the measurement of the effectiveness of a particular learning material. A simple video or a quiz can be tracked to show us the way participants interact with the tool, the number of times they watch a video or the questions that are usually answered correctly or incorrectly. Consequently, some level of personalization can be achieved with minimum effort during the class, but also in relation to the way the participant interacts with the material. Learning analytics also allows the learning material to be enhanced and improved constantly.

It is key that the content that is developed in a multimedia format generates value. For instance, including a video interview with the manager of a company or an expert in a multimedia case, allows the learner to view that input first-hand in a more appealing way. It even allows the student to observe body language as well as other factors. A virtual visit shows the plant or the processes, and with a simulation, students can practice countless times during short periods of time, which would be very complicated without technology.

Today, people are used to interacting with technology from the moment they wake up and they continue engaging with technology whilst at work. It shouldn't be any different when it comes to learning. Technology has given us the opportunity to make the learning experience more engaging, immersive, interactive, emotional and practical. Including some of these materials in a class will enable you to achieve a higher level of engagement, increase the retention level as well as raise interest in the topics that the students are studying.

Throughout this article various digital learning materials have been mentioned and described, if you want to take a further look please visit IE Publishing's catalog; <https://iepublishing.ie.edu/>. At IE publishing, we will continue to experiment in this field so that our students can have effective learning experiences.