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# Enhancing learning with branching scenario simulations like TopLang: Guidelines to using H5P content blocks

*UPSKILLS Intellectual output 4.3*

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## Executive Summary

These guidelines were designed as a resource for educators who seek to gain a deeper understanding of how to develop **interactive educational content** in the form of real-world simulations. They are one of the outcomes of the UPSKILLS project aimed at integrating game elements into language- and linguistics-related degree courses. The specific goal of these guidelines is to show how a specific technology, namely **H5P**, can be utilized to develop interactive simulations that provide learners with immersive and experiential learning, as was the case with the TopLang game that was created under the auspices of UPSKILLS.

H5P is an **open-source content creation and sharing framework** used for creating interactive and multimedia-rich content for the web. It is **compatible with modern web browsers** without the need for additional plugins, and simulations built with H5P can be easily embedded within learning management systems (LMS) or shared online, facilitating seamless **integration into existing educational platforms**, such as Moodle. H5P has the advantages of being potentially **familiar to lecturers** who create learning content on LMS, and of being supported by a very active user community, which produces extensive documentation, tutorials, and showcases.

After a brief introduction to the **fundamental principles of gamification and game-based learning** within the context of digital education, these guidelines showcase the implementation of these principles within the UPSKILLS project.

The core sections of the guidelines provide an overview of the applications of H5P. They list and describe the editors where **H5P content blocks** can be created, and then hone in on the utilization of various H5P content blocks that we see as especially relevant (*Branching scenario*, *Course presentation*, *Drag the words*, *Drag and drop*, *Single choice*, *Fill in the blanks* and *Mark the words*). For each of these content blocks, a detailed explanation is provided of how they were used within **TopLang**, the simulation game produced within the UPSKILLS project. Several links are also provided to **tutorials** on H5P content blocks, so that interested readers can learn more. The ultimate aim is that of inspiring the development of games which simulate student or work environments, as a complement to other forms of interactive learning.

As simulations can become an integral part of a curriculum, a dedicated section is devoted to **how to implement a simulation game using H5P content blocks on Moodle**, where instructions are also provided on how to **track student participation and performance** through learning analytics.

The final section is devoted to presenting the **limitations and obstacles** with which we were faced in the creation of the TopLang game, taking stock of the lessons learnt.

## List of abbreviations

Abbreviation	Definition
LMS	Learning Management System
LRS	Learning Records Store
WYSIWYG	What You See Is What You Get
R&D	Research and Development
GBL	Game-based learning
PBL	Points, badges and leaderboards

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## 1. Introduction

These guidelines were designed as a resource for anyone who seeks to gain a deeper understanding of the simulation creation process and embark on the rewarding journey of developing interactive educational content. They are one of the outcomes of a specific aspect of the UPSKILLS project, which encompassed the integration of game elements into the learning resources designed to educate [language data and project specialists](#). Their specific goal is to demonstrate how H5P content blocks can be utilized to develop interactive simulations that provide learners with immersive and experiential learning, no matter the field of study.

The creation of both gamified Moodle courses and educational games during the UPSKILLS project was a direct response to the [Needs analysis](#) conducted at the beginning of the project and these guidelines specifically draw upon the expertise gained from developing the game [TopLang](#), which seeks to simulate a work environment tailored to students in language-related disciplines.

In section 2, these guidelines will first present the fundamental principles of gamification and game-based learning within the context of digital education. Subsequently, a concise demonstration will showcase their implementation within the UPSKILLS project. While a brief overview of gamification will be provided through the integration of badges and leaderboards into [UPSKILLS Moodle courses](#), the primary focus of the guidelines will be on the development of educational games. Notably, the guidelines will delve into the creation of the TopLang game using various types of H5P content blocks, exemplifying game-based learning in action.

Following this, a brief overview of the potential applications of H5P will be provided, followed by an exploration of the editors where H5P content blocks can be developed. Specifically, these guidelines will hone in on the utilization of various H5P content blocks we see as especially relevant (*Branching scenario, Course presentation, Drag the words, Drag and drop, Single choice, Fill in the blanks and Mark the words*). For the last five mentioned content blocks, there will be a link in the following section to the corresponding level in TopLang where the activity created using that content block can be played. It is important to note that within a single level, there may be multiple pages that cannot be individually linked. Therefore, if the presented activity is not the first one in that level, it will be necessary to complete the previous items to access the one created using the featured content block.

Additionally, each level of the TopLang game can be downloaded in .h5p format by clicking on the  button that is available at the bottom-left corner of each game level on the UPSKILLS website. In this way, you can use the existing files as a foundation for your independent creation of simulation games. In line with this, the primary aim of this manual is to inspire the development of similar games that simulate student or work environments. Examples of using H5P content blocks in these guidelines are straightforward, yet they can be further customized and enhanced to suit individual needs and interests.

As detailed tutorials on H5P content blocks are available on the official [h5p website](#) or on various YouTube channels, some of these contents are linked for readers to quickly access them. Since there are always several YouTube clips available on the same topics, we chose the ones in which it seemed to us that the explanations were given in the most systematic and clearest way. Additionally, in the screenshots created for these guidelines, you will have the opportunity to see the appearance of the Lumi editor, one of the many H5P editors. Based on our knowledge, H5P editors, many of which will be further presented below, generally have the same basic functionalities and offer a similar appearance.

As simulations can become an integral part of the curriculum, a dedicated section will be devoted to implementing a simulation created using H5P content blocks on Moodle, one of the most widely used Learning Management Systems (LMS), where this game can be integrated with other digital learning materials and where student participation and performance can be tracked through learning analytics.

Although the consortium partners involved in creating the TopLang game are overall satisfied with the possibilities of using H5P for simulation creation, a special section is dedicated to limitations and additional considerations to take into account before engaging in this task. This includes issues with saving progress on Moodle and WordPress, as well as the importance of being aware of the existence of different H5P versions in and integrating multimedia content within H5P.

Once the technical aspects of creating simulations using H5P content blocks have been explained, in the last section, we also provide suggestions on how simulation development can be utilized as a learning activity with BA students.

## **2. Gamification and game-based learning within UPSKILLS**

Two major challenges currently faced by university-level educators and course designers alike are a) enhancing student engagement and motivation throughout the duration of the course and b) producing graduates who are well-equipped for the ever-changing requirements of the job-market. Overcoming the first challenge is essential in order to decrease university student drop-out rates and provide a fruitful learning experience (e.g., Henderikx et al., 2017). Overcoming the second challenge is equally vital in order to ensure that graduates can thrive in the job-market by equipping them with the necessary skill-set (e.g., Barrie, 2007). The two challenges are intrinsically interwoven and dependent on a carefully planned course design, one which encourages student participation and facilitates the acquisition of a wide range of skills. The inclusion of games and gamification has been shown to be pivotal in overcoming these challenges, that is, in motivating and engaging students (e.g., Zahedi et al., 2021) and in enabling the development of graduate attributes (Barr, 2017).

Gamification and game-based learning (GBL) are two distinct approaches to integrating game elements into the educational experience (see also, Camilleri 2023a, 2023b). While they share the common goal of leveraging the motivational and engaging aspects of games, there are fundamental differences in their implementation (Figueroa-Flores, 2016). On the one hand, games are defined as “an exterior expression of play [that] involve[s] sets of rules, activities and various types of gameplay in order to achieve an ultimate purpose” (Kuo & Chuang, 2016, p. 16). Gamification, on the other hand, as defined by Deterding et al. (2011), is “the use of [...] game elements in non-gaming systems to improve user experience and user engagement” (p. 1). Research shows that both GBL and gamification in university courses are positively correlated with increased adaptability and resourcefulness of students (e.g., Barr, 2017), heightened motivation and engagement (e.g., de-Marcos, 2014; Jurgelaitis et al., 2019) and a dip in drop-out rates (e.g., de la Peña et al., 2021).

While the implementation of games and gamification strategies can be of great benefit for learners and educators alike (Jurgelaitis et al., 2019; Squire, 2011), the success rates boil down to the careful design prior to implementation (Corchuelo Rodríguez, 2018; Krath et al., 2021). When carefully choosing and/or developing game-based interventions, the course designers should take into consideration both cognitive and emotional spheres of learning; they should “consider how our students learn and how we can enhance their performance globally” (de la Peña et al., 2021, p.1). In this respect, they should explore student attitudes to the application of games and gamification strategies in university courses (much like we also did within UPSKILLS; see Camilleri 2023c). As widely acknowledged, students do not always appreciate the great value of game-based learning, show resistance towards active participation and turn down innovative teaching methods which encourage collaboration between students and creative and critical thinking (Henderson & Dancy, 2007; Egenfeldt-Nielsen, 2007). “Students may resist learning activities that do not align with their preconceived notions of education” (Barr, 2018, p. 284) and hence, this is one of the initial hurdles that course designers and educators need to be aware of and strive to overcome when incorporating games and gamified materials. And indeed, the way in which GBL is introduced to learners has often been noted to affect their perspective of the approach, at times instilling a positive outlook from the start (Barr, 2018; Felder & Brent, 1996).

Both commercial off-the-shelf games (COTS) and games specifically designed for a particular course have been evaluated in recent studies (e.g., Krath et al., 2021, Shi & Shih, 2015). Equally, numerous gamification elements have been weighed out to gauge which elements are best suited for educational purposes (e.g., Delnevo et al., 2022; Jurgelaitis et al., 2019). When carefully designing a course, decisions such as whether to implement games or gamification, or both, and whether to use COTS or develop a new game determine the final outcome of the course. Advocates of COTS, such as Tannahill et al., argue that “educators can and should take advantage of the untapped resources with COTS to establish contemporary pedagogy that is exciting, interesting, and relevant for the modern-day student” (2012, p.3). COTS have a vast array of features, such as in-game tutorials, rewards, dynamic

content and automatic feedback which enhance motivation and are vital organs of a healthy educational system (Tannahill et al., 2012; see also Camilleri 2023a)).

The good practices present in COTS, which facilitate both the delivery of the learning content and the development of a desirable skill-set, should be exploited directly by introducing COTS in university courses and applied in games designed for the courses. Moreover, these good practices can be integrated through gamification techniques. De la Peña et al. state that “there are seven basic techniques for doing gamification, and one or more may be applied to any course, choosing a well-known game to implement them, or creating a new gamification experience based on satisfying certain techniques” (2021, p. 3). These seven techniques outlined in their paper include a scoring system, links to social commitment and unlocking extra content (de la Peña et al., 2021). Incorporating such elements in a course is proven to incentivise students, fuel their motivation and engagement and ultimately positively affect student grades, as demonstrated in Jurgelaitis et al. (2019), amongst others. Fantasy, for example, a common gamification element, is described by Malone & Lepper (1987) as a factor of motivation and engagement in education and is proven to “promote student learning and quality of online interaction”, according to Bai et al. (2022) who conducted two studies on the implementation of fantasy using a design-based research approach. Storytelling is one way of applying fantasy in a university course. Vos et al. (2019) state that “stories are common in games and support meaning making and emotional engagement that foster learners’ motivation and learning” (p. 618).

Recent literature vividly demonstrates that through carefully designed courses making use of games and gamification elements, “synergy between pedagogy and engagement” is evident (Van Eck, 2006, p. 18). This synergy reverberates in educational success and graduate employability. As depicted throughout this section “games provide cognitive stimulation, motivation, constant assessment, and the encouragement of a system style of thinking” (Tannahill et al., 2012, p. 1), and “gamification provides an opportunity to foster motivation in students, stimulate their study, improve their attention and thereby strengthen meaningful learning, which allows content to be internalised and [used] effectively in different areas of life” (de la Peña et al., 2021, p. 3). Hence, the implementation of games and gamification at university level should be encouraged and further research should be stimulated so as to continue to fine-tune university course designs in order to obtain optimal results.

All in all, both games and gamification techniques can be smoothly integrated into university courses. While gamification enhances existing non-game experiences with game elements (Al-Azawi et al., 2016: 133), GBL places the game as the core vehicle for delivering educational content and promoting active learning, i.e. “game-based learning makes people feel as if they are playing computer games” (Al-Azawi et al., 2016: 134). When applied to the same digital learning content, gamification and GBL should be viewed as complementary approaches rather than mutually exclusive options (Imlig-Iten & Petko, 2018). The creators of UPSKILLS courses and games recognized the value of combining both approaches to deliver a more comprehensive and impactful learning experience. This

integration allowed for a holistic approach where gamification elements on UPSKILLS Moodle courses coexist with immersive game-based activities of the simulation and serious game kinds, fostering a rich and dynamic overall learning environment.

As already noted, gamification involves the incorporation of game elements, mechanics, and dynamics into non-game contexts which can include the use of points, badges and leaderboards (PBL) to incentivize desired behaviors. For example, users earn points for completing tasks or achieving specific milestones, collect badges as virtual achievements, and compete on leaderboards to showcase their performance compared to others. The PBL approach often relies on competition, rewards, and status to motivate users and drive engagement. It provides clear feedback on progress and offers a sense of achievement and recognition through tangible rewards and social comparison. (Clarke et al., 2016). Within the UPSKILLS learning content blocks, this has been achieved by implementing completion badges. These badges are awarded to students upon completing each unit within a block. Additionally, an interactive element has been introduced where students can collect coins that have been randomly hidden in various activities throughout the course.

In contrast to gamification, as we have seen, GBL revolves around using games as the central component of the educational activity. It entails designing or utilizing complete games that immerse learners in interactive and narrative-driven experiences, where learning objectives are embedded within the gameplay itself. Within the realm of GBL, the UPSKILLS consortium experimented with two distinct approaches: serious games and simulations (Ahmed & Sutton, 2017). While they share the common goal of utilizing game elements to enhance the learning experience, they differ in their focus and methodology. Serious games are specifically designed with educational objectives in mind, aiming to deliver targeted learning content through engaging gameplay. These games are purposefully crafted to facilitate learning outcomes, such as knowledge acquisition or skill development. In contrast, simulations, which are the focus of these guidelines, grant instructors the flexibility to customize the content to meet their specific course needs. They enable learners to engage in exploration and experimentation within virtual environments that closely emulate real-life situations.

Given the previous categorization of GBL possibilities (Ahmed & Sutton, 2017), two serious games were created during the UPSKILLS project: *Guess the language* and the *Maze game*. *Guess the language* was designed to help players understand the axes of variation which account for the heterogeneity encountered across natural languages. The *Maze game* is a digital platform that allows lecturers to create a first-person game where players navigate through the maze by selecting the correct answers to the questions asked. Lecturers can easily become game creators by entering text-based questions in a simple digital environment, entering correct and incorrect answers, without any limitations on the number of questions. Once the game creation is complete, a six-digit code is generated and can be shared with the students, who visit the Maze game website and instead of choosing 'Create Maze,' they opt for 'Play Maze,' where they then enter a code. The game utilizes authentic "gamer" controls

for navigation, requiring some adjustment for students who are not accustomed to playing first-person games. The goal of both of these serious games, one with predefined but adaptable content (*Guess the language*) and the other allowing flexibility for instructors to include content based on their course needs (*Maze game*), is to reinforce specific subject matter. On the relevant sections of the UPSKILLS website, you can find descriptions and scope, explanations of how to play and adapt these games, as well as how to use the games in the classroom.

That being said, the main focus of the present manual is to provide an overview of the TopLang, the main game developed to cover multiple parts of the UPSKILLS learning content, by adopting the perspective of a simulation.

### 3. TopLang: An UPSKILLS simulation experience

TopLang is an interactive, text-based game which simulates the experience of working as an intern in a Research and Development company that specialises in linguistic analysis using digital and NLP methods. It has been largely inspired by [Lives in Transit](#), a game created within the University of Zurich with the purpose of simulating the experience of researching and writing global history, but was developed instead using the H5P plugin to ensure easier deployment and adaptability across a number of learning management systems and even simple websites.

In TopLang, the player adopts the role of a graduate who has just completed a course on a language-related subject and gets the opportunity to apply for an internship in a big company, after having completed an “upskilled” curriculum that focuses on digital skills. Following a set of gameplay instructions, the first four levels of the game, which serve as a means of building up the storyline and immersing the player in the scenario, focus on the process of applying for the internship and culminate in the player having to make a decision about whether to join the company’s language analysis or NLP team.

Apart from the distinct focus of the tasks to be completed as an intern in each team, the two separate paths of the game also underlie two different ways in which TopLang, or indeed an adaptation of it, can be used in an educational setting. If the player chooses the Language path, they will be asked to complete a number of tasks of varying difficulty, as part of their day to day work at the company, all the while being given the chance – for most of these tasks – to check the relevant materials from the UPSKILLS learning content. The Language path thus showcases a way in which TopLang can be used/adapted to gamify the students’ learning experience by providing a storyline that could act as a “cell” for teaching a particular class or even full course. On the other hand, the NLP path showcases a way in which TopLang can be used/adapted to gamify the students’ assessment upon completion of a course/module. In this regard, it comprises a stratified quiz, presented through a series of

interactive videos, where the player is called to answer questions that require bringing in disciplinary knowledge after an NLP course/module is completed. Finally, the last level in each path introduces an engaging dilemma which will lead the story to a culmination, adding an exciting resolution as the goal of the overall game.

While TopLang can be used as a standalone game, it should be noted that the player would probably need to have covered some ground on the areas touched on in the UPSKILLS learning content in order to play it (especially if they decide to go down the NLP path). In view of this, a primary aim of the game is to not only show how the UPSKILLS learning blocks can be gamified, but also – and perhaps primarily – to showcase that game-based learning through simulation can be cost-effective, ‘easy’ to implement and versatile enough to deploy in various educational settings. To this end, the remainder of this manual concentrates on H5P, the framework that we ended up using to develop TopLang.

## 4. Creating H5P branching scenario simulations in UPSKILLS

Research conducted during the UPSKILLS project (Assimakopoulos et al., 2021 and Gledić et al., 2021) revealed that students in language-related degrees are not adequately prepared for emerging jobs at the interface of languages and technology. The simulation of a work environment can offer them a glimpse of what it means to work in these settings, enabling them to understand general procedures and workflows while utilizing the knowledge they have acquired during their studies, thereby building confidence.

As already noted above, the initial conceptualization of the UPSKILLS simulation was inspired by [Lives in Transit](#), a web application developed at the University of Zurich, which was designed for crafting multimedia adventure games and tailored for lecturers aiming to create their own games and host them on the platform. A fundamental characteristic of *Lives in Transit* is its branching scenario, where some player choices do not influence the course of the game, while others do. This feature is part of the core mechanics that make each player's journey unique. In addition to the branching narrative, *Lives in Transit* introduces a unique feature simulating real-time communication: players “receive” emails throughout the game, visually represented by an envelope icon indicating the number of received messages. Moreover, the game offers the possibility of implementing a timer, adding a sense of urgency, and fostering decision-making under pressure. Furthermore, *Lives in Transit* has a feature that allows players to download their in-game writings along with multimedia content in a .pdf format. This innovative feature provides a comprehensive record of the player's journey and their interactive experiences throughout the game.

Unfortunately, it is not currently possible to install the *Lives in Transit* backend, Marugoto, without essential troubleshooting from the University of Zurich, which was not offered to us while developing this UPSKILLS game. This made *Lives in Transit* problematic

for our purposes, given that, like us, future users would not be able to leverage our experience in creating a simulation game. However, the general approach to branching scenario design, if not the technical component, was instrumental in the design of the TopLang game. We would therefore encourage those wishing to design simulation games to also play one of the Lives in Transit Games for inspiration.

Given the unavailability of the Marugoto backend, an alternative was sought that would support the types of content implemented in Lives in Transit. This was found in H5P, a powerful, flexible tool for the creation of branching scenario simulations. H5P (HTML5 Package) is an open-source content creation and sharing framework used for creating interactive and multimedia-rich content for the web. It provides a set of tools that allow users to easily create and share interactive content. H5P is built on web technologies such as HTML5, CSS and JavaScript, making it compatible with the modern web browsers without the need for additional plugins. H5P has already been successfully used in similar ways within the [Canadian Alliance of Nurse Educators using Simulation \(CAN-Sim\)](#) initiative. [Numerous simulations](#) have been developed in this way within this project, empowering nurse educators to deliver immersive and interactive learning experiences to their students. With H5P's intuitive interface and versatile content types, educators have been able to design branching scenario simulations that simulate real-world patient care situations, allowing learners to make decisions, assess outcomes and refine their critical thinking and clinical reasoning skills (Killam & Luctkar-Flude, 2021).

Despite being unable to replicate certain specific features of the Lives in Transit games, such as the option for end users to receive a .pdf document as a unique outcome of their learning, utilizing H5P to create branching scenario simulations presented us with several advantages. H5P provides a user-friendly and intuitive interface that enables educators to easily create interactive and engaging simulations without extensive programming knowledge. Its wide range of content types, such as interactive videos, quizzes, and interactive presentations, allows for versatile simulation designs that cater to diverse learning needs. Additionally, H5P simulations are web-based and can be accessed on various devices, including smartphones, making them flexible and accessible for learners.

Furthermore, H5P simulations can be easily embedded within learning management systems (LMS) or shared online, facilitating seamless integration into existing educational platforms, which, for instance, is not possible with Lives in Transit. The ability to track learner interactions and collect data through xAPI integration further enhances the assessment and analytics capabilities, providing valuable insights into learner progress and informing instructional strategies. Finally, H5P may be already familiar to lecturers who create learning content for sharing on numerous LMS platforms, and is supported by an active user community, which produces extensive documentation, tutorials, and showcases.

## 4.1 H5P editors

As mentioned above, H5P is an interactive technology that empowers users to create diverse content for the web, utilizing H5P editors to craft these materials. Actually, it offers a range of editors to cater to different user preferences and platform requirements. These editors provide users with flexibility and options when creating and editing H5P content. Various editors have been developed to accommodate different workflows and allow users to choose the editor that best aligns with their preferences and requirements, enabling them to create interactive and engaging content seamlessly. We have tested the editor available on H5P.org, the ones for Moodle and WordPress, and the offline Lumi editor, but others may be available that better suit your needs.

[The official H5P website](#) offers a web-based tool where users can create H5P content directly in their browser, essentially manipulating H5P content blocks within the H5P editor.

If you are using WordPress, you can install the H5P plugin from the WordPress.org plugin repository. The H5P plugin allows you to create, embed, and manage H5P content directly within your WordPress site, which is also the route that we opted for when it came to the implementation of TopLang.

The use of H5P plugins across various Learning Management Systems (LMS) has revolutionized the way educators create and integrate interactive content into their online courses. In [section 4](#), there will be an exploration of the implementation of H5P content specifically on Moodle. It is important to note that the H5P Moodle plugin is necessary for uploading H5P content created in other editors onto the platform, and may also be used for creating H5P content directly within Moodle.

Based on experience gained from UPSKILLS, there may be certain challenges when integrating content from external editors into Moodle, which will also be further discussed in the dedicated section covering the limitations of using H5P in the creation of branching scenario simulations.

However, when it comes to working within the H5P editors themselves, there are also several limitations that can be identified. One of the obstacles encountered when using Lumi, the editor that was used in various phases of the UPSKILLS project, is the lack of automatic progress saving. Lumi, just like the editor available on the official H5P.org site and the integrated H5P editor on Moodle, does not have an auto-save feature, which means that if you forget to manually save your progress, all your work may be lost. This can be particularly frustrating if you have spent a significant amount of time creating or editing content, as is often the case. Therefore, it is important to develop a habit of regularly saving your work to ensure that you do not lose any progress.

Another obstacle is the fact that generally editors for H5P content are not designed to support real-time collaboration among multiple users. Typically, each user works on their own instance of the H5P content, making edits and modifications independently. This means there is no built-in feature in the H5P editors to enable simultaneous editing or collaboration

between multiple users on the same H5P content. In scenarios where multiple users need to work together on creating or modifying H5P content, coordination and sequential editing become necessary. The approach that was followed during the development of the TopLang game within the UPSKILLS project was to have one user complete their work on a particular material, export it, and then pass it on to another user who would continue working on it. While this sequential workflow can allow multiple users to contribute to the creation of H5P content, it does require careful coordination and communication among team members to ensure smooth collaboration.

While the appearance may slightly vary between the different H5P editors mentioned, they all offer the same capabilities, providing a seamless and user-friendly environment for manipulating H5P content blocks. The WYSIWYG (What You See Is What You Get) nature of the H5P editors ensures that what users see as they construct and edit their content directly mirrors what the end users will experience. With the ability to customize and adapt content blocks to suit specific learning objectives and audience needs, H5P content blocks have become an invaluable tool for creating interactive and effective digital learning resources.

## 4.2 H5P content blocks

This section showcases the main features of selected H5P content blocks, and illustrates their appearance within the H5P editor. It's important to note that not all content blocks will be covered in this overview. The subsequent section highlights how certain content blocks were specifically employed to construct the TopLang simulation as part of the UPSKILLS project.

A ***Branching scenario*** in H5P is an interactive content type that allows learners to engage in decision-making and experience different outcomes based on the choices they make within a virtual scenario. It presents learners with a series of choices or situations, and their selected options determine the subsequent path and narrative direction of the scenario. The ***Branching scenario*** is generally considered effective for simulating real-world decision-making, exploring cause-and-effect relationships, and encouraging critical thinking skills. Learners can explore various pathways, observe the consequences of their decisions, and receive immediate feedback, making the learning process engaging and interactive.

Within the framework of the ***Branching scenario*** in H5P, there are several elements that contribute to its functionality and interactivity, but the most important is a ***Branching Question***, which enables the inclusion of questions and the definition of different paths depending on the user's response. Each choice leads to a different set of consequences or new choices, creating a dynamic and personalized learning experience. Additionally, one of the answers can lead to the termination of the game, i.e., the player reaches a so-called 'dead end', usually accompanied by appropriate feedback. A ***Branching Question*** can also be structured so that no matter which of the available answers is chosen, the learning path within the game continues identically. In the UPSKILLS project, an approach called "fake nodes" was

utilized, a term that aligns with the literature's "illusion of choice" (Brown, 2016). This concept, widely employed by game designers, entails subtly influencing players' decision-making to fabricate a sense of choice where none truly exists, thereby fostering a perception of player control within the designer-defined constraints (ibid.). The subsequent section elaborates on the specific reasons for the application of "fake nodes" and the avoidance of "dead ends" in the TopLang game.

In addition to the distinct *Branching Question* element, which is visually different in the *Branching scenario* interface (represented by a blue box in the picture below), there are other building blocks that creators can utilize within the *Branching scenario*.

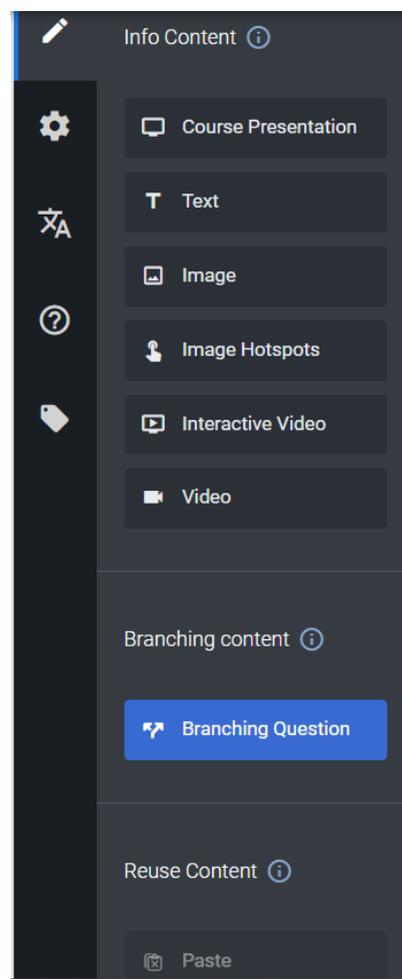


Figure 1. Branching Scenario building blocks

The **Text** is typically chosen when there is a need to provide information, instructions or context to the learner and when you choose the **Image** option, you are primarily selecting an image as your main content, without the possibility to add text. **Image Hotspot** allows users to overlay interactive markers or 'hotspots' onto an image. When a learner hovers over or

clicks on these hotspots, additional information is displayed in the form of text, another image or even a video.

The **Interactive video** involves the use of videos that include interactive elements, such as questions that appear at certain points during the video or clickable areas within the video frame. These elements can test comprehension or provide additional information. The *Video* allows for the inclusion of a video without interactive elements, serving as a straightforward way to present dynamic visual content. It is useful to highlight that, unlike the *Image* and *Image Hotspot*, where images must be uploaded from the computer, the *Interactive Video* and *Video* offer the option to link to an existing YouTube video.

Using H5P *Video* provides a range of advantages, but it also presents certain challenges. The benefits primarily lie in the realm of student engagement. Video content typically captures more attention, potentially enhancing student participation and involvement. Furthermore, by capturing real-life situations, the videos provide a more authentic learning experience, enabling students to feel as if they're part of a real working environment. Additionally, videos can impart contextual information that may be difficult to convey through text or images, enriching the learning experience.

A **Course presentation** in H5P is a content type designed for the creation of interactive slideshows, encompassing a range of multimedia elements and interactions. With the H5P *Course presentation*, you can create a series of slides or screens containing text, images, videos, audio and interactive elements. Each slide can be customized with different layouts and formatting options. The *Course presentation* can perhaps be best conceptualized as a presentation similar to those made in PowerPoint or Google Slides. However, in addition to text and multimedia content, it also allows the inclusion of interactive elements. Moreover, it provides an added functionality: users, upon completion of the interactive elements, can receive feedback.

The previously described elements that can be used to create a *Branching Scenario* can also be added as content to slides within the *Course Presentation*. For example, one slide may contain only text, another only an image, a third an *Image Hotspot*, etc. However, what the *Course Presentation* offers is the combination of multiple options on a single slide, where, for instance, an image and an interactive video can coexist.

In addition to the aforementioned *Interactive Video*, which can also be added to a slide within the *Course Presentation* and onto which interactive elements can be appended, discrete interactive options can be directly added to the slides of a *Course Presentation*. A more detailed explanation of these will follow, including *Single choice*, *Multiple choice*, *Fill in the blanks*, *Drag the words*, *Drag and drop* and *Mark the words*.

*Single choice* and *Multiple choice*, as separate options within the *Course Presentation*, share many similarities in their functionality and usage.

The **Single Choice** allows creators to design interactive quizzes with multiple options for learners to choose from. This content block presents learners with a question or statement and provides a set of answer choices. Learners can select the correct answer from the options

provided. In a single choice set, the learner is presented with a list of options and can choose only one option as their answer.

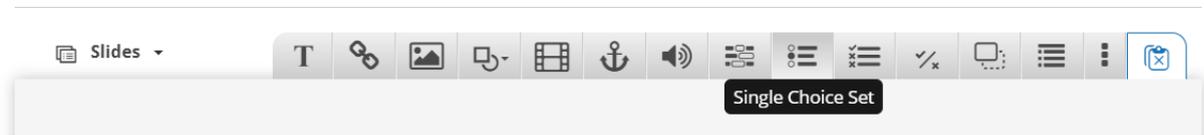


Figure 2. Choosing Single choice within Course presentation

A similar mechanism is implemented in **Multiple choice**. In this case, however, the learner is presented with a list of options and can choose multiple options as their answers. This type of interaction is useful when there are multiple correct options or when the learner needs to select all applicable choices from a given set.



Figure 3. Choosing Multiple choice within Course presentation

The **Fill in the Blanks** is an interactive activity that prompts learners to complete missing words or phrases within a given text. This content block provides an engaging and interactive way to assess learners' understanding of the content and their ability to recall and apply key information; learners are presented with a passage or sentence where certain words or phrases have been omitted, and they must input the correct answers in the blank spaces, challenging learners to recall and apply knowledge in a meaningful context.

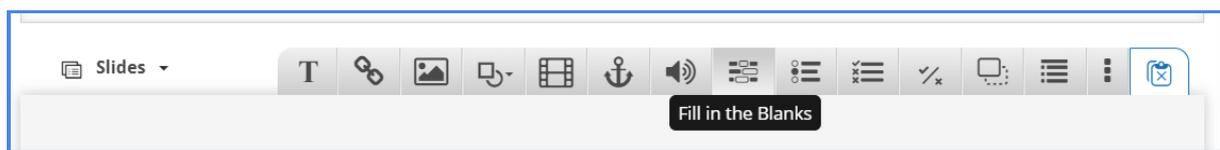


Figure 4. Choosing Fill in the Blanks within Course presentation

**Drag the Words** is a content type available within Course presentation that facilitates interactive activities where learners can drag and drop words onto designated areas or targets. The focus of this content type is on transferring words into empty text fields by dragging and dropping them. It offers an engaging and interactive approach to presenting information, assessing knowledge and reinforcing learning concepts.

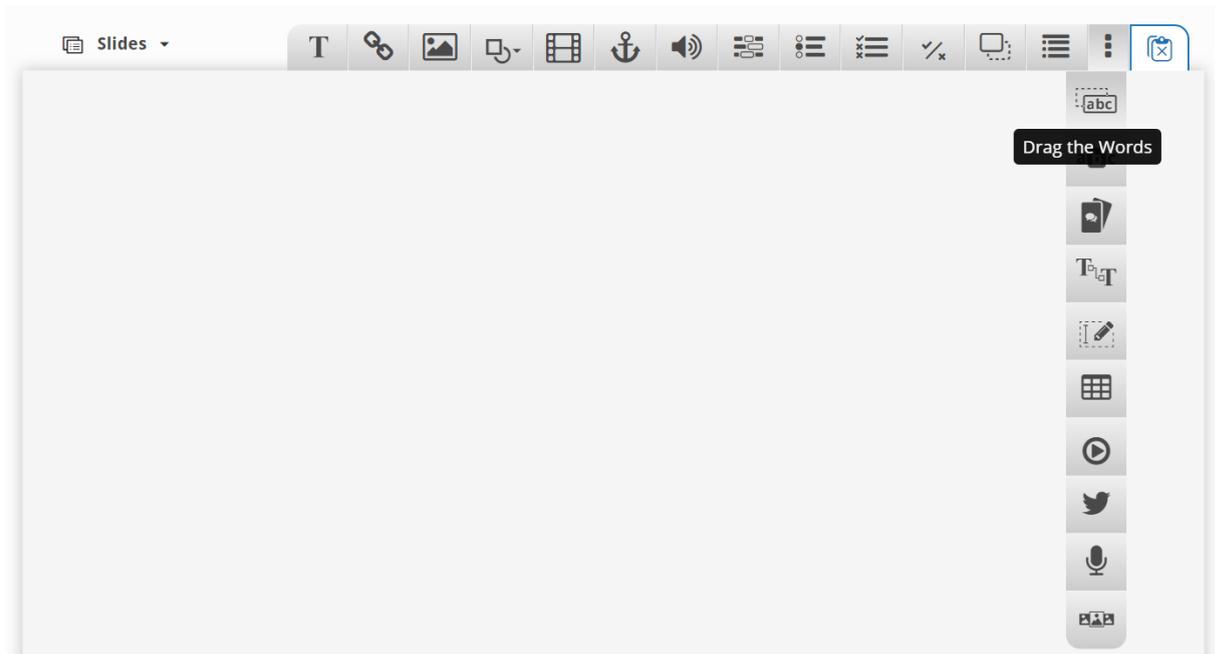


Figure 5. Choosing Drag the words within Course presentation

In **Drag and Drop**, learners are presented with draggable items and drop zones on the screen. The objective is to drag the items and correctly place them into the corresponding drop zones based on the provided instructions or criteria, including whether multiple items can be dropped in a single drop zone, or if certain items are restricted to specific drop zones.



Figure 6. Choosing Drag and Drop within Course presentation

**Mark the Words** is designed to engage learners in interactive word recognition exercises. In this activity, learners are presented with a text passage or sentence and are required to identify and select specific words or phrases within the given content. It is generally used to improve word comprehension and vocabulary skills by actively engaging with the text and accurately marking the designated words.

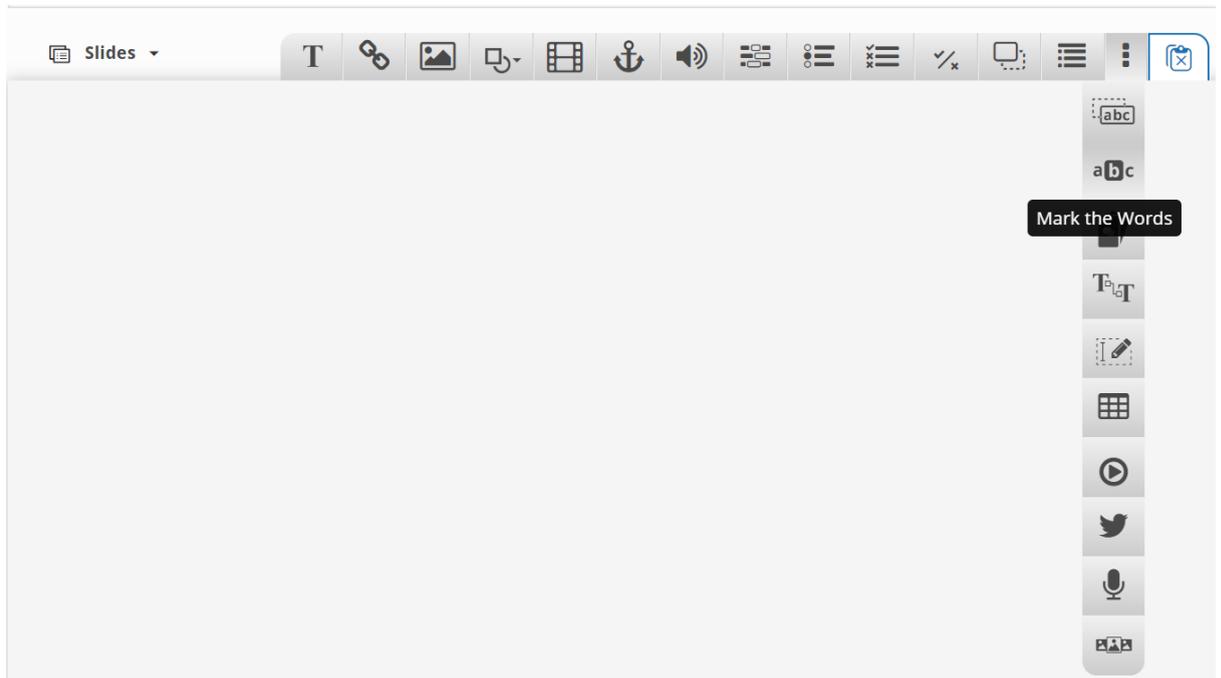


Figure 7. Choosing Mark the Words within Course presentation

*Table 1* contains links to tutorials from different YouTube channels that explain how to create content using the described H5P content blocks. Some of the videos were recorded in the H5P.org editor, some in H5P WordPress, and most in H5P Moodle. You will notice that the environment is practically identical, so the sequence of described procedures that you will be able to follow is the same.

<a href="#"><u>Branching scenario</u></a>
<a href="#"><u>Interactive video</u></a>
<a href="#"><u>Single choice</u></a>
<a href="#"><u>Fill in the Blanks</u></a>
<a href="#"><u>Drag the Words</u></a>
<a href="#"><u>Drag and Drop</u></a>
<a href="#"><u>Mark the Words</u></a>

Table 1. Links to YouTube tutorials of selected H5P content blocks.

### 4.3 The TopLang implementation

The creation of the branching scenario simulation within the UPSKILLS project was a challenging process in which it was necessary to conceive content that ties in with existing Moodle courses and to know how to utilize the described capabilities of H5P content blocks. However, since the idea was to convey the work atmosphere as realistically as possible, not only will activities related to the application of specific knowledge and skills be presented, but also activities focused on team building, for example. The purpose of these activities was to simulate a work environment that involves interactions with team members.

TopLang was designed to incorporate content that aligns with a wide range of UPSKILLS learning material previously developed on Moodle within the UPSKILLS project. These TopLang contents serve as examples to demonstrate how simulation games could become an integral part of the curriculum, rather than encompassing the entirety of Moodle learning material produced within our project.

As already noted above, the primary objective is to inspire lecturers to adopt a similar approach and leverage simulation games in their teaching methods. So, two potential uses of simulations within the educational process are highlighted through examples of two learning paths in TopLang. The first one, the Language path, aims to provide support during the learning process, while the second one, NLP Specialist, serves as an example of how simulations could be utilized for assessment purposes.

In the first learning path, students have the opportunity to access notes, which is achieved by embedding these notes into the game, either as part of a presentation or through a help button that provides additional information to aid students in finding the solution. In the second learning path, students are required to draw on their knowledge from an entire course (in our case, [The Essence of Machine Learning for Linguists in Tech](#)) to answer a series of progressively challenging questions, without embedded access to notes.

Beyond these two paths, TopLang comprises four introductory levels, which have been designed to create an immersive experience, by introducing main story characters and help the player establish a particular type of behavior as the story's main character. Following these levels, the player needs to choose between the aforementioned Language path or NLP path. Given their different aims, the time the player is expected to spend on them differs as well. The Language path comprises eight extra levels, offering a number of different activities that the player will need to complete, while also giving them the option, as mentioned above, to check lecture notes in the process. By contrast, the NLP specialist path includes three extra levels, which means that it can be more readily used in an exam setting. Obviously, depending on the scope within which lecturers choose to use the game, they can instruct their students to choose a particular path or adapt it to fit the course's learning objectives. Given that there is one main branching, whoever tries out TopLang can play the game at least twice.

Creating a branching scenario simulation requires a combination of various H5P content blocks, and the use of the **Branching scenario** H5P content block served as a framework for the interactive experience for TopLang as well.

Given that the goal of TopLang was for the student-players to go through the simulation of the complete work experience in a busy environment of a Research and Development (R&D) company specializing in language technology, there is no Branching Question in the game for which one of the answers would terminate the game before the student has the opportunity to go through all segments of the simulation. Due to the same desire for students to go through the same experiences in different parts of the game, but without depriving them of the chance to explore all options, so-called 'fake nodes' were used in the game: a Branching Question is presented to the student-players, but regardless of how they answer, the same learning path continues.

Although the branching scenario within the H5P capabilities can be designed to have more than two possibilities branching out from a branching question, for the purposes of TopLang, mostly binary branching has been implemented, with some instances utilizing more options. Binary branching allows for a clear choice between two options, which may be sufficient for most interactive scenarios and implementing more complex multi-branching could require additional development effort and complexity.



Figure 8. Snippet of the Branching Scenario view from the first level of TopLang

As previously explained, the main branching point offers players the choice between two learning paths, namely the Language Path and the NLP Path. Once this choice is made, there is no further overlap between the paths, even though a portion of the material, which simulates a team building activity and which we will describe in more detail below, is repeated in both learning paths.

As presented in the previous section, the typical use of a Branching Question is to provide multiple answer options, each of which can lead to a different path or outcome. However, in TopLang, the Branching Question was exploited in such a way that the text provided to players was actually not in the form of a question. Instead, the text was usually a specially crafted part of the scenario highlighting a specific action, as in the example shown in figures.

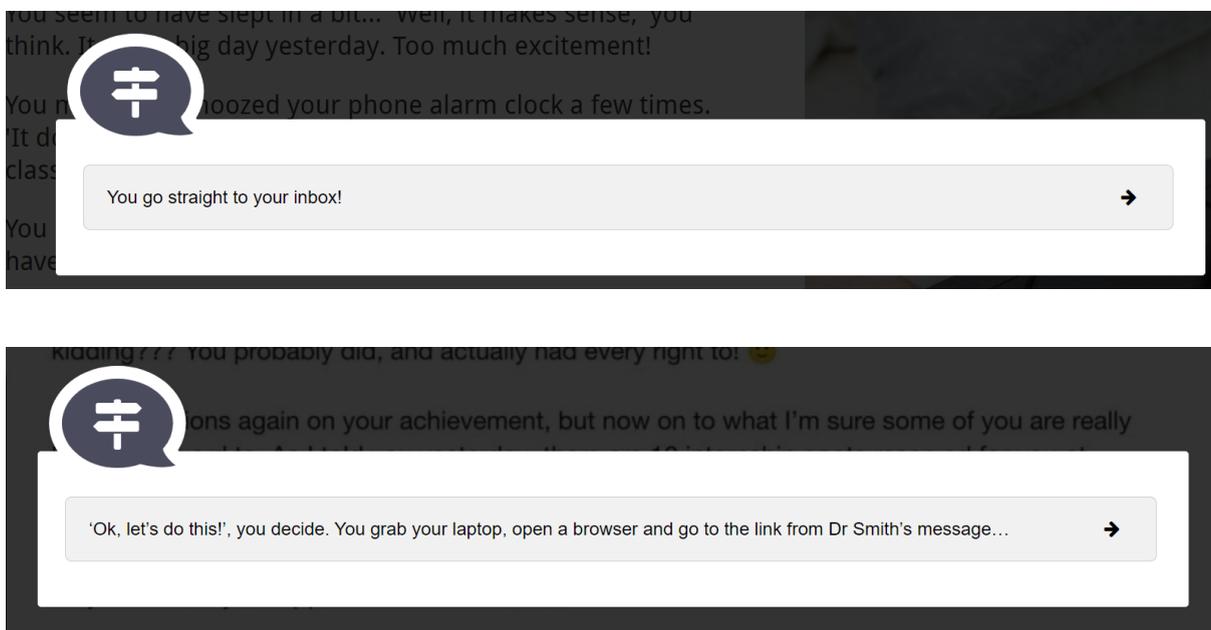


Figure 9. Two instances of a Branching Question with a single option

The Branching Question was used on several occasions in the Language specialist learning path, when players were offered access to additional learning materials. TopLang was designed as a series of individual tasks, so one option was to directly access the task, and the other was to go through educational content from the reference area. For example, in the first job task at the company, where the player is required to collect texts from different companies to create a gold standard corpus, they have the option to approach the task without additional preparation or they can choose to go back to their class notes, in the form of Course Presentation, which will be presented in more detail later as one of the H5P building blocks.

Additional learning materials cited here as part of one of the simulation paths actually already existed in an expanded form as part of some of the UPSKILLS Moodle courses. It is

important to underscore the fact that during the UPSKILLS project, H5P content blocks were not only used for creating the TopLang simulation but were initially employed for developing educational materials within Moodle courses. This enabled the reuse of segments from previously created Moodle content to construct segments of the TopLang simulation. The reusability of H5P content blocks is considered as one of the advantages.

Offering players the opportunity to review their study notes, the aim of TopLang was to emphasize the importance of continuous learning. The intent was to illustrate that acquiring knowledge is not a one-time event, but rather a sustained, ongoing endeavor. By integrating the review of study notes within a game-like environment, the value of regularly revisiting educational material was underscored, fostering a habit of consistent study and lifelong learning.

As previously mentioned, one of the building blocks for a branching scenario is *Video*. Within the H5P educational content, this format is commonly used for dynamic presentations in the form of video lessons. However, in TopLang this format has been utilized differently: a series of online meetings were designed and recorded for the game's purposes. For example, in the first of the interconnected videos the student-player attends a regular weekly meeting with a client and another NLP specialist. Near the end of the meeting, the other NLP specialist leaves the conversation due to a "poor connection", leaving the student-player in a situation where they need to describe their approach to the task at hand in the continuation of the scenario.

The experience of the creators of the TopLang game has revealed that developing high-quality video content can be a time-consuming endeavor, requiring additional resources and expertise that might not be readily available. However, as will be elaborated in the concluding section of these guidelines, students themselves can play an active role in the process. They can participate in conceptualizing the scenario, engaging in the filming process, and even undertaking basic video editing tasks.

As shown in the previous section, the *Course Presentation* offers the ability to incorporate multimedia and interactive content across a series of slides. However, in TopLang, this block was employed on numerous occasions even when a single slide was needed to create multimedia content.

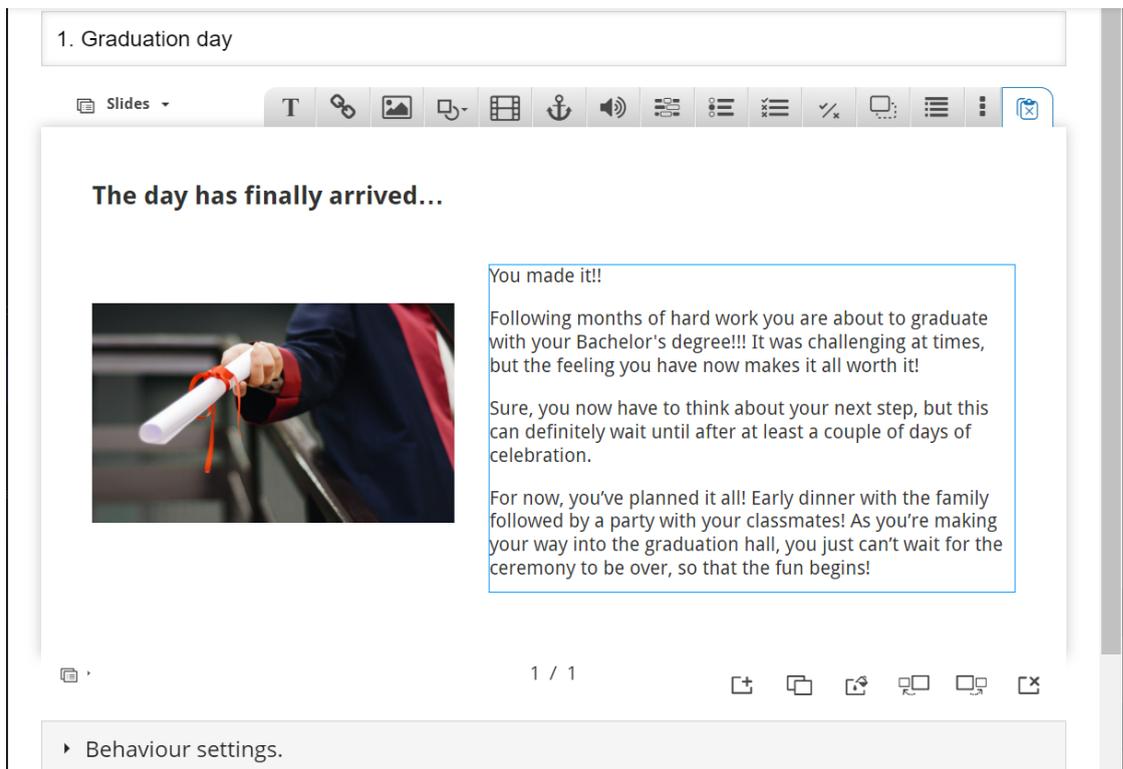


Figure 10. Multimedia slide in H5P editor: image and text

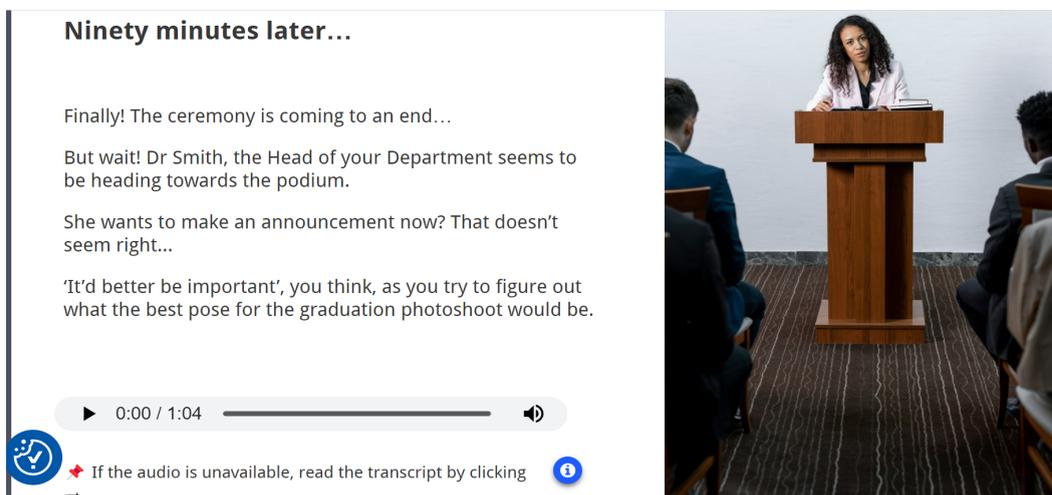


Figure 11. Game-like view of a Course presentation multimedia slide: text, image and audio

Interactive features of *Course presentation* were particularly important for recreating real-life experiences.

**Single choice** was incorporated into TopLang as a team-building game for employees in the company where the player assumes the role of an intern. That is the activity that has

been used in both learning paths, making it available for playing in both [Level 5a](#) and [Level 5b](#), where a) stands for the Language path, and b) for the NLP path.

The group-bonding activity is based on collocation knowledge where the player needs to choose the word among the given options that collocates with all the mentioned examples. With this specific task, it was important to demonstrate to players that they can expect to participate in activities that involve team building within companies. More specifically, *Single choice* activity is chosen here to simulate a team activity where other participants offer their suggestions, and the player is in a position to choose one of the correct answers.

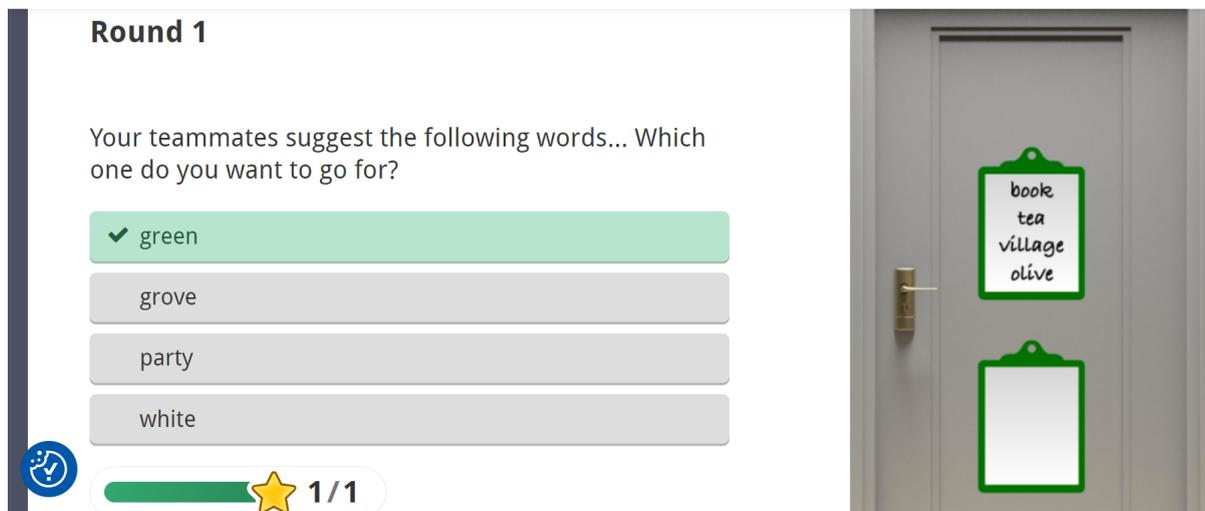


Figure 12. Game-like view of a slide featuring *Single choice* after a correct answer

As a continuation of the previously described activity that utilized the *Single choice* for simulating a team-building activity, *Fill in the Blanks* was also employed to simulate a different dynamic of communication within the team. In contrast to the first activity where the student-player had to choose the correct answer based on suggestions provided by their peers, *Fill in the Blanks* served as a simulation model when the student-player themselves needed to provide the correct answer because "no one else had an idea." This variation of the activity aimed to simulate individual problem-solving and decision-making within the group, highlighting the importance of personal contribution and independent thinking in certain group scenarios. Since it is a continuation of the game for which *Single choice* was used in the previous paragraphs, the same links apply for playing *Fill in the Blanks*.

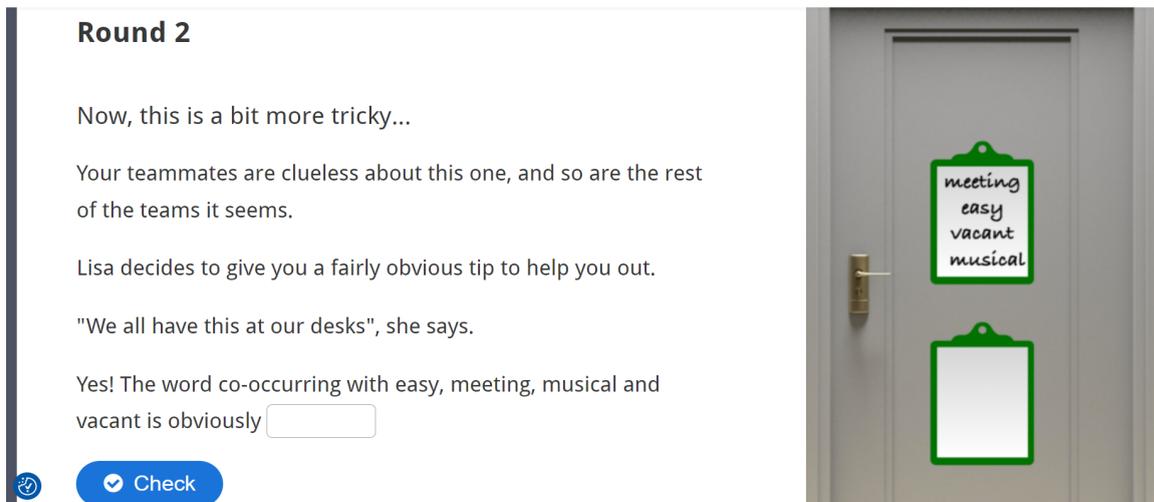


Figure 13. Game-like view of a slide featuring Fill in the Blanks question before answer

Unlike the previous two described activities, which simulate specific situations in the work environment, **Drag the words** has been used as one of the activities for testing specific knowledge in a particular field, i.e. as a quiz question, where users can drag answers in the form of text to the appropriate places to test their knowledge, in this specific case, regarding transcription rules. It is available for playing in [Level 11a.](#)

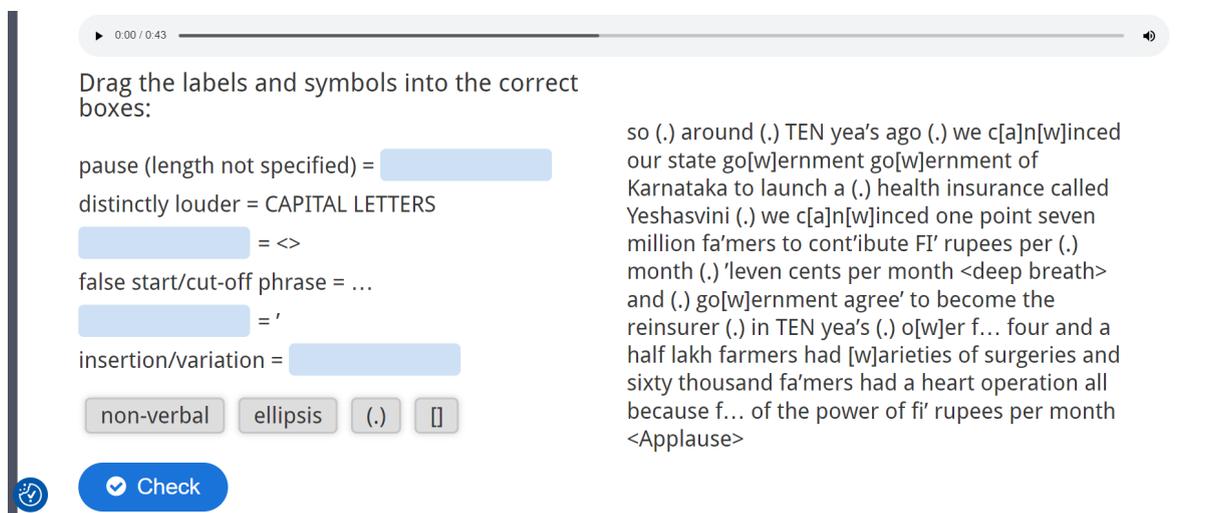


Figure 14. Game-like view of a slide featuring Drag the words question before answer

The **Drag and Drop** activity in TopLang was meant to make students-players reflect on textual and contextual features you may rely on when building a specialized corpus for reference purposes in a translation task.

This activity, available for playing in [Level 6a](#), was inspired by the task dedicated to learning how to collect reference texts for semi-specialised translation assignments, as part of an advanced practical English to Italian translation course at a BA level at the University of Bologna Department of Interpreting and Translation. This Project-Based Learning task served as inspiration for both a portion of the pertinent UPSKILLS Moodle course and the TopLang activity. In the task, students are given a text in English and asked to collect comparable Italian texts that could serve as translation models.

As part of the activity assigned as homework for the course, the task is not explicitly defined, requiring students to use their judgment. Once the texts have been gathered in a shared repository, the class reviews the texts, assessing their usability based on comparability in genre and topic, reliability, recency, etc. A list of exclusion/inclusion criteria is established, and a core collection of the best comparable texts is assembled for future reference. Following these agreed-upon principles, students are then encouraged to expand this corpus independently.

Within the Moodle course [Processing Texts and Corpora](#) => Principles of Corpus Design and Construction, a simplified version of this classroom activity is included. Additionally, a more extensive version of the activity is replicated in the TopLang game. In both cases, the *Drag and Drop* content block within *Course presentation* was utilized; players must drag the provided texts into certain folders. This task simulates the decision-making process in text selection, a challenge that an intern in the game, acting as a corpus creator, must face. Methodologically, this activity is also meant to exemplify the integration of learning contents and simulation games.

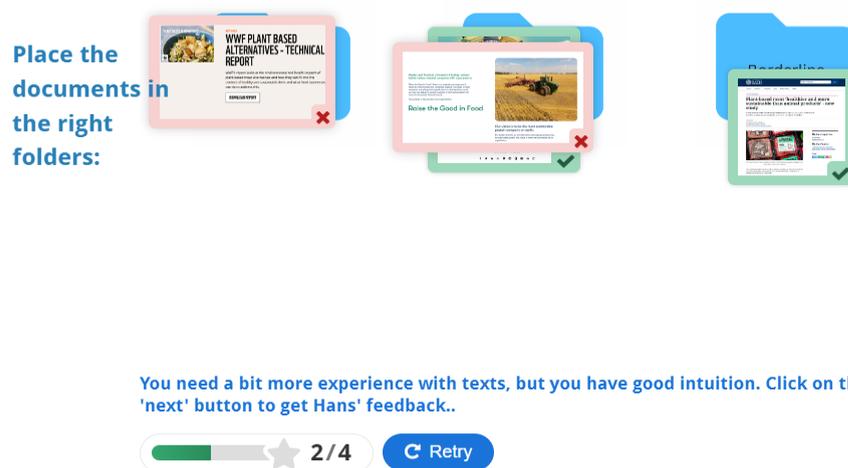
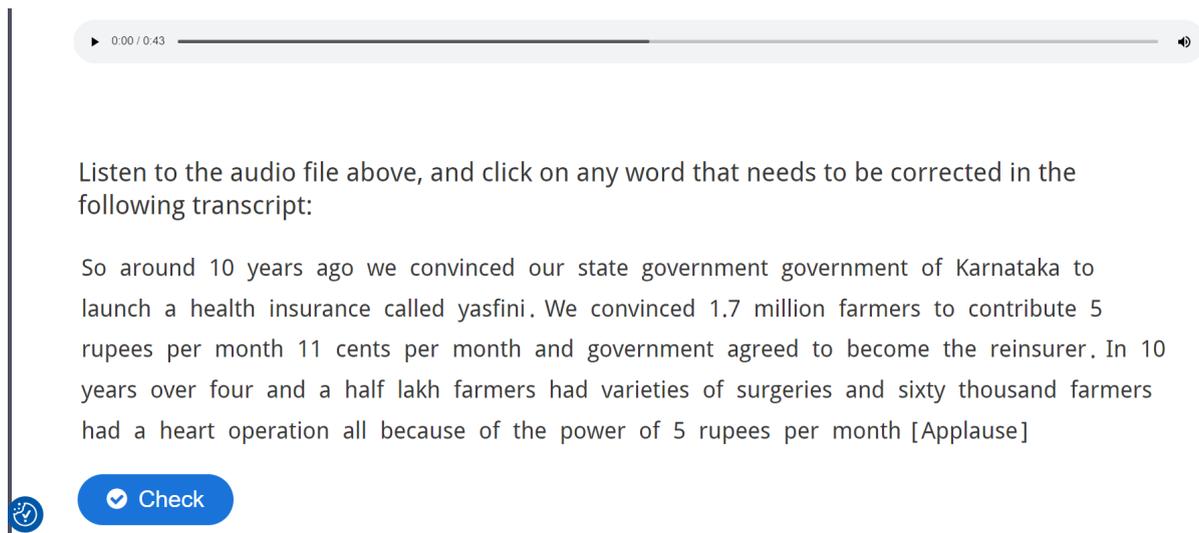


Figure 15. Game-like view of a slide featuring a Drag and Drop question with a partially correct answer

**Mark the Words** has been used to simulate one of the activities within the Language path, available for playing in [Level 8a](#). Regardless of whether the student-player volunteered without thinking to help with the transcript or was practically pushed into the activity by a colleague, the two options presented by the Branching Question in the previous section of the game, they receive a transcription file that needs to be rechecked for accuracy.

The task is further contextualized with the information that the automatic speech recognition model that the NLP team is training won't really work. In the task, the student-player needs to mark all the words that need to be corrected.

Since the process of checking transcription files, which can be in various formats like .txt, .docx, or .xlsx, for instance, involves manually correcting any discrepancies, *Mark the Words* content block was used to verify if a student can detect and subsequently correct all errors while comparing the audio recording with the transcript. Thus, this segment of TopLang does not fully simulate the entire process of correcting a transcription file but rather focuses on a specific aspect of that activity: creating a space where the student must decide which words are not transcribed accurately.



*Figure 16. Game-like view of a slide featuring a Mark the Words before answer*

Even though the text has already provided links to the TopLang level for each H5P content block where you can experience the activity created in that exact way, for clarity, a tabular representation of this information is provided below.

<b>H5P content block</b>	<b>Level in TopLang</b>
<i>Single choice</i>	<a href="#">Level 5a</a> and <a href="#">Level 5b</a> (same activity)
<i>Fill in the Blanks</i>	<a href="#">Level 5a</a> and <a href="#">Level 5b</a> (same activity)
<i>Drag the Words</i>	<a href="#">Level 11a</a>
<i>Drag and Drop</i>	<a href="#">Level 6a</a>
<i>Mark the Words</i>	<a href="#">Level 8a</a>

Table 2. Selected H5P content blocks and links to corresponding levels in the TopLang game

## 5. Implementation of H5P branching scenario simulations on LMS for online and blended learning modalities

Given that a branching scenario simulation is designed to function autonomously without the need for lecturers intervention, it can be incorporated not only into blended learning environments, but also into fully online courses. The consideration of how simulations, as a specific type of digital content, can be implemented in existing face-to-face courses goes beyond the scope of these guidelines. However, no matter the type of online or blended learning model (rotation model, flex model, self-blend model and enriched-virtual model; cf. Staker and Horn, 2012) in which simulations like TopLang can be utilized, it is important to consider the technical aspects of implementing content created in H5P on existing LMSs.

In the next section, a more detailed presentation will be provided regarding the implementation on Moodle, as it was the platform used for course creation within the UPSKILLS project. However, it's important to note that H5P can also be deployed on other LMSs such as Canvas, Blackboard, Sakai, and Brightspace, among others.

A separate section will be dedicated to exploring the capabilities of tracking student behavior on Moodle, with a note that the presented xAPI tool for learning analytics was not tested within the UPSKILLS project.

### 5.1 H5P plugin for Moodle

As mentioned above, H5P contents can be effectively implemented within a variety of LMSs, allowing users to seamlessly incorporate interactive content into their websites or

online courses. Within the UPSKILLS project, the implementation of H5P contents was primarily carried out on the Moodle platform.

Whether H5P content is created directly on Moodle or in another editor such as Lumi and then uploaded to the platform, it is important that the H5P plugin is already installed on Moodle. The H5P plugin is automatically integrated into Moodle starting from version 3.9, which was developed in 2020. Starting from that version of Moodle, H5P became part of the core installation, eliminating the need for separate installation as an add-on.

To check if the H5P plugin is installed on your Moodle version as a lecturer, you can follow these steps: log in to your Moodle account with your Teacher credentials, navigate to a course where you have editing privileges, click on the "Turn editing on" button to enter the course editing mode. In the course editor, select "Add an activity or resource" in the section where you want to add H5P content. Look for "H5P" in the list of available activities or resources. If you see H5P listed there, it means that the plugin is already installed on your Moodle version and you can proceed to add H5P content to your course.

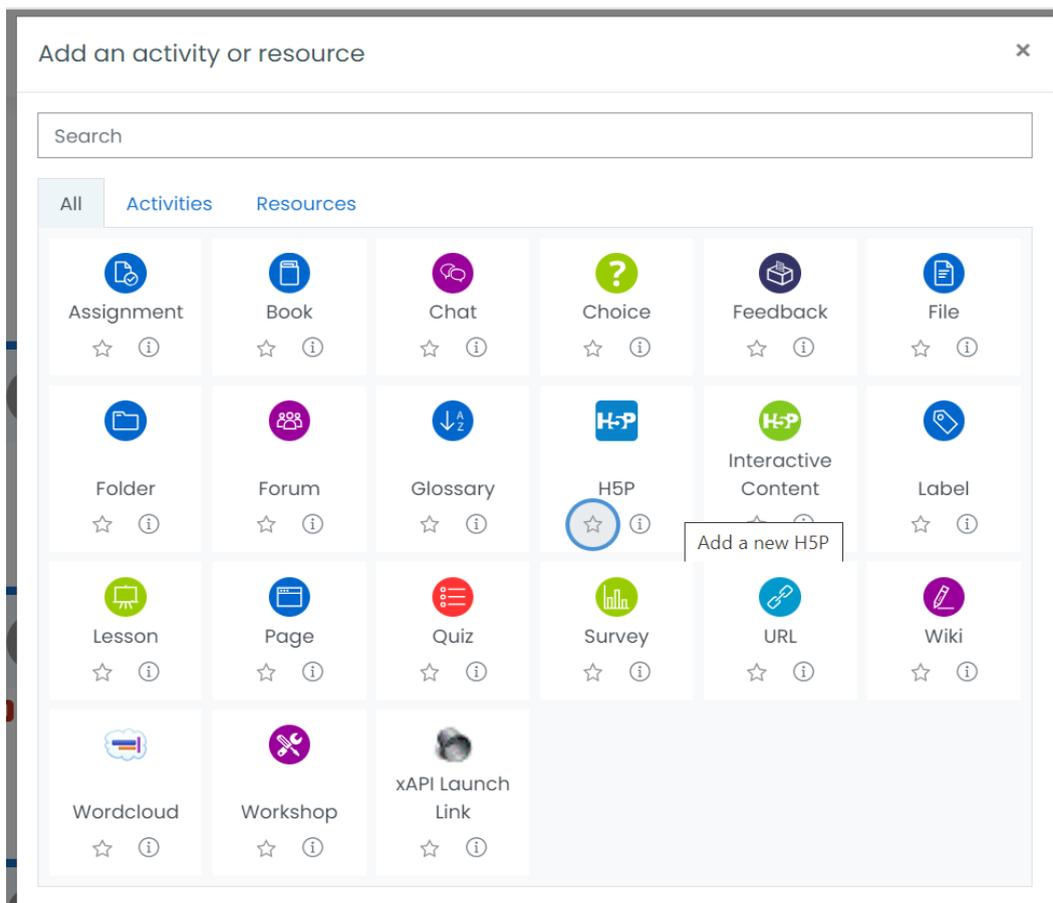


Figure 17. List of available activities and resources in Moodle 3.9.

In Figure 17 you can observe that besides the “H5P” content, which is integral for creating simulations like TopLang developed as part of the UPSKILLS project, there's also “H5P Interactive” content. This module represents the outcome of integrating H5P with Moodle at the core level, a process initiated with Moodle version 3.9. In addition to all the features provided by the original H5P module, "Interactive Content (H5P)" also supports the inclusion of H5P content within other Moodle activities and resources, such as books, pages, forums, and quizzes. However, this particular module is not the focus of these guidelines.

To upload content that was previously developed in other editors to Moodle, the "H5P" option is used. After clicking "Add," you'll be directed to a new page. Here, you'll need to give your new activity a name and, if you wish, a description. Below these fields, there's a section for adding the H5P content. In the section for adding the H5P content, you need to click on the button that says "Upload." Then, locate and select the H5P file you have previously downloaded from the other editor. If the upload is successful, you will see a preview of your H5P content.

## **5.2 H5P learning reports on Moodle. xAPI plugin for branching scenario**

The statistics should provide information on student interactions with the digital content, such as the time spent, frequency of use, popularity of specific modules or activities and completion rates. This data should allow educators to identify patterns, recognize student challenges, and provide targeted support or interventions when needed. Additionally, the statistics can guide curriculum enhancements, content updates, and future development efforts.

One of the reasons for using H5P for simulation creation is its easy implementation on Moodle, which, when combined with the use of an additional plugin, allows for detailed statistics on student engagement. However, in a dedicated section, some of the limitations of implementing branching scenario simulations created in H5P will be presented, such as the issue of progress saving.

The integrated learning report on Moodle generally provides valuable insights into student learning and engagement. Through this report, instructors can access detailed data on student participation, progress and achievements. The information available in the learning report includes the number of enrolled students, time spent on the course, completed assignments, scores on tests and quizzes, as well as participation in discussion forums and other activities.

However, within the standard Moodle reports, there is insufficient data visibility regarding students' behavior within H5P content. For instance, it is not possible to view details such as pages read versus pages skipped, time spent on each page or section, correct/incorrect responses to specific task questions, the number of attempts for each question, or the duration of student engagement with demonstration videos.

Without an additional plugin, student access to H5P content can only be observed by navigating through the following path: Reports > Logs > H5P Content Viewed. Additionally, in the individual student report, you can find the number of views for a specific H5P content, but only the most recent view along with its corresponding date. It's important to note that these data in the individual student report pertain not only to H5P content but to all content created for students on *Moodle*.

A possible solution could be installing a plugin specifically designed for learning analytics. xAPI is a standard for tracking learning experiences across platforms. H5P supports xAPI, and enabling it can help track progress in your game.

To enable xAPI support in your H5P activity, it is necessary to follow a specific sequence of steps. You will likely need the assistance of a local Moodle administrator for installing the xAPI plugin. This is because unlike traditional learning analytics, the xAPI plugin requires connecting to a pre-existing Learning Record Store (LRS). These are the key settings to consider when using the xAPI plugin to track the progress of learners in H5P activities. Go to "Site administration" > "Advanced features" and enable "Completion tracking". Once the plugin is successfully installed, access the desired H5P activity and go to the "Edit settings" section. Scroll down until you reach the "H5P options" section within the settings. Here, you will find the option labeled as "Enable xAPI support." Check this option to activate the xAPI functionality for the specific H5P activity.

As mentioned above, what sets apart data collection using the xAPI plugin from standard learning analytics is the requirement of setting up a Learning Record Store (LRS), which is typically the responsibility of a Moodle administrator. Unlike traditional learning analytics, where data is primarily gathered within the learning management system (LMS), the xAPI plugin necessitates the creation of an LRS. The LRS acts as a centralized repository for storing and managing the xAPI statements that capture learner interactions and experiences across various platforms and activities. It requires technical configuration and administration to ensure the proper functioning of the LRS and the seamless integration of xAPI data with the learning ecosystem.

It is important to emphasize once again that xAPI, as a tool for collecting detailed learning analytics, and its corresponding LMR, were not tested within the UPSKILLS project, and the knowledge we share below about its capabilities is gathered from a course that you can access [here](#) and the suggested resources provided there.

When using the H5P Branching Scenario content type, xAPI statements can capture a wealth of data pertaining to learners' interactions with the content. For instance, xAPI statements can track the learner's progression by recording the number of branches explored and the paths taken. They can also capture the choices and decisions made by the learner at different decision points within the scenario. Additionally, the time spent on the branching scenario, as well as the time spent on individual branches or decision points, can be captured through xAPI statements. Other data that can be tracked include the learner's score and completion status. Finally, xAPI statements are capable of capturing the learning outcomes

achieved by the learner, encompassing knowledge gained, skills developed, and competencies demonstrated. These comprehensive data points enable educators to gain a holistic view of learner progress and inform instructional strategies to optimize the learning experience.

## 6. H5P simulation limitations and additional considerations

H5P simulations prioritize ease of use and the simplicity of implementation on LMS platforms over high-fidelity realism. As a result, the level of realism in simulations may be simplified or limited compared to more specialized simulation software, such as [Unity](#) with a wide range of tools and features for building 2D and 3D environments and incorporating animations. On a practical level, this can mean that players perceive the H5P simulation to involve a significant amount of reading.

It is important to note that during the UPSKILLS project, other interactive content created in H5P was implemented on Moodle courses, but not the TopLang simulation that is the focus of these guidelines. However, based on our experience with Moodle, we will also discuss the implementation of H5P content on Moodle, as well as on WordPress, where the TopLang simulation is hosted.

### 6.1. Saving progress on Moodle and WordPress

All types of H5P content typically rely on client-side technologies like HTML5 and JavaScript. These technologies operate within the user's web browser, which may have certain limitations when it comes to saving progress. For example, the browser's local storage or session storage capacity might be limited. Additionally, if a user switches devices or clears their browser cache, the saved progress may be lost. This lack of centralized storage can be a challenge when it comes to maintaining continuity of progress across different devices or sessions.

One of the key advantages of using H5P activities on Moodle is the ability to save and track learner progress. By enabling the *save the progress* functionality, learners can seamlessly continue their learning journey and pick up where they left off. We strongly advise you to seek assistance from your Moodle administrator for the most up-to-date information and guidance on implementing progress saving in H5P activities. However, the following are fundamental pieces of information that may be helpful for this question.

To implement the “save the progress” feature for H5P activities on Moodle, two essential plugins are required: the *H5P plugin* and the *Completion Tracking* plugin. As previously presented, the H5P plugin serves as the foundation for creating and incorporating H5P activities into Moodle courses, while the *Completion Tracking* plugin enables Moodle to track and record learner progress within activities.

Within each H5P activity, configure the completion settings to determine the criteria for marking an activity as completed. This can be based on factors such as viewing, answering questions, or achieving a specific score. Customize the display of progress information within the H5P activity to provide learners with a visual indication of their progress. Moodle offers various options, such as progress bars or completion percentages, which can be configured to suit your needs.

When it comes to saving the progress of H5P content on the WordPress platform, the situation is specific and depends on how H5P is implemented and configured on the WordPress site. WordPress itself offers the ability to save user progress through the use of cookies. However, H5P content does not inherently support automatic saving of learning progress on WordPress. To enable the saving of H5P content progress, additional plugins or tools that provide such functionality need to be used.

There are several plugins available for WordPress that can add the capability of saving H5P content progress. For example, the H5P Progression Tracker plugin allows for tracking learning progress through H5P content and storing the data in the WordPress database. Other plugins, such as the H5PxAPI plugin, enable integration of H5P content with the xAPI standard for progress tracking.

In any case, thorough research and consultation with WordPress experts or technical support is recommended to find the best solution for saving H5P content progress on the WordPress platform according to specific needs and requirements.

## **6.2. Different H5P versions**

H5P has gone through various updates and versions, each bringing new features, improvements and bug fixes. However, it is important to note that different versions of H5P may introduce some compatibility issues. As newer versions are released, there is a possibility that certain content types created in older versions may not function optimally or may require adjustments to work seamlessly. Additionally, the availability of specific content types may vary across different versions of H5P, as new content types are introduced and older ones may become deprecated (for example).

Therefore, when working with H5P, it's crucial to engage the assistance of technicians or administrators who can ensure that the chosen content type is compatible with the version of H5P being used and that any dependencies or requirements are met. Collaborating with knowledgeable individuals who can handle technical aspects, such as installation, updates, and compatibility checks, can help mitigate any issues and ensure a smooth experience for both content creators and learners. Staying informed about the latest updates and actively maintaining and updating the H5P content with the support of technicians can further enhance compatibility and optimize the learning experience.

### **6.3. Integrating multimedia content with H5P**

When discussing the selection of content blocks for TopLang, we emphasized the importance of using multimedia content. The need for the simulation to be enriched with images, audio and video content is accompanied by the concern for copyright.

When incorporating images, videos, or other media into H5P interactive content, it is important to consider the potential uses and adhere to copyright regulations. Failure to respect copyright can lead to various consequences and legal implications. These may include copyright infringement claims, lawsuits, financial penalties and damage to your reputation. Additionally, unauthorized use of copyrighted materials can undermine the rights of the original creators and hinder their ability to benefit from their work. It is essential to adhere to copyright laws and obtain proper permissions or licenses when using copyrighted materials in H5P content creation to ensure ethical and legal practices.

When using multimedia content for H5P content blocks, it is necessary to ensure that we have the necessary rights to use the content, either by creating it ourselves, obtaining permission from the copyright holder or using content under a Creative Commons license.

In the H5P editor, when using multimedia content created by others, it is important to give proper attribution by providing the necessary credits. This means including the creator's name, title, source, and any other information required by the copyright holder or license terms in the appropriate window within the H5P editor.

It is important to be aware of any copyright limitations or restrictions associated with the multimedia content. Some content may have specific usage conditions, such as non-commercial use only or requiring modification or adaptation. It is crucial to comply with these limitations and respect the rights of the content creator.

If there is uncertainty about the copyright status or permissions for a particular multimedia content, it is recommended to reach out to the copyright holder and request permission to use their work. This is particularly important when using copyrighted materials that are not covered by fair use or educational exceptions.

Most of the photos used in TopLang as visual support for the main narrative (e.g., workspace and people's appearance) were sourced from [Pexels](#) and [Pixabay](#). These are popular online platforms that provide a vast collection of free, high-quality stock photos, videos, and other multimedia content (see [Annex 1](#)).

Generally, consider utilizing multimedia content that is available under Creative Commons licenses. These licenses provide a framework for sharing and using copyrighted materials with certain permissions and conditions. It is important to familiarize yourself with the different Creative Commons licenses and ensure that your use of the content aligns with the specific license terms.



Metadata (sharing and licensing info)  
Fill in the fields below

Save metadata

Title \* ⓘ Show label for AT

L75. One-to-one meeting with Maria

License \* License Version

Attribution (CC BY) 4.0 International

Years (from) Years (to) Source

https://

Author's name Author's role \*

Firstname Surname Author Save author

UPSKILLS consortium Author ✕

Figure 18. H5P Editor Metadata Window

The process of adding metadata can be undertaken once the multimedia content has been created as part of the Branching scenario, whether it was generated directly (for example: Image or Video) or within the Course presentation. By choosing the Edit content option, a new window is prompted. Here, next to the mandatory field named Title, there's also a tab labeled Metadata, which you need to click on. Upon doing so, another window opens up (as shown in the Figure 18) where you are required to fill in the necessary copyright-related details about the materials that you've utilized in your content.

## 6. Untested ideas for blended learning using simulations

Inspired by the general approach to research-based learning in UPSKILLS, as well as the Lives in Transit approach and, the co-creation experience within the Canadian Alliance of Nurse Educators using Simulation (CAN-Sim) initiative where students participated in simulation creation, we would like to suggest that students may also benefit from participating in the creation of simulations.

Students are encouraged to form teams to design scenarios. Given that some training in using H5P capabilities is provided, they can create interactive content that will be accessible to future student generations. This is a realistic expectation as H5P, based on our experience, is not overly complex and does not necessitate programming skills, allowing students to use it with minimal preparation. They can also engage in creating simulations using H5P. Furthermore, the professor can handle the technical aspects in the H5P editor, leaving students to contribute to the more creative elements of the task. Additional practical advice for involving students in the process of creating simulations using H5P branching scenarios can be viewed in [this presentation](#), created for lecturers in the field of medicine, but applicable to other contexts as well.

Research concerning the affordances of student co-creation of content on their academic performance remains relatively scarce in current literature, even though proposals for higher education students to collaborate in pedagogical planning are not a new concept (Dewey, 1916). The practice of content co-creation, where students actively participate in the production of learning materials, has been recognized as a potentially effective learning strategy. However, its impacts on measurable academic outcomes are not thoroughly examined.

More specifically, the impact of participation in creating virtual simulations on academic performance remains an unexplored area. While there are studies on this topic in the field of medical and nursing education (for example, Killam & Lucktar-Flude, 2021), in the realm of social sciences and humanities, and specifically in the fields of language studies and linguistics, we have not found any reference studies, whether qualitative or quantitative.

Although the UPSKILLS project will conclude in August 2023, we invite you to write to us without hesitation if you decide to create simulations using H5P for your students, and especially if you wish to design an activity that will actively involve them in the process.

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## Annex 1 - Multimedia used for TopLang

<i>Slide</i>	<i>Image used (&amp; audio, if applicable)</i>
<b>LEVEL 0: Instructions</b>	
Opening	<a href="https://www.pexels.com/photo/person-sitting-in-front-of-the-laptop-computer-7102/">https://www.pexels.com/photo/person-sitting-in-front-of-the-laptop-computer-7102/</a>
Closing	<a href="https://www.pexels.com/photo/have-fun-inscription-on-gift-bag-in-shop-6353837/">https://www.pexels.com/photo/have-fun-inscription-on-gift-bag-in-shop-6353837/</a>
<b>LEVEL 1: A graduation with a twist!</b>	
Opening	<a href="https://www.pexels.com/photo/person-wearing-analog-watch-2293019/">https://www.pexels.com/photo/person-wearing-analog-watch-2293019/</a>
1. Graduation day	<a href="https://www.pexels.com/photo/person-holding-white-scroll-2292837/">https://www.pexels.com/photo/person-holding-white-scroll-2292837/</a>
2. Internship announcement during graduation	<a href="https://www.pexels.com/photo/a-woman-standing-on-the-podium-8730761/">https://www.pexels.com/photo/a-woman-standing-on-the-podium-8730761/</a>
3a. Post-graduation celebrations (positive attitude)	<a href="https://www.pexels.com/photo/photography-of-people-graduating-1205651/">https://www.pexels.com/photo/photography-of-people-graduating-1205651/</a>
3b. Post-graduation celebrations (negative attitude)	
4a. At the bar with classmates (positive attitude)	<a href="https://www.pexels.com/photo/people-drinking-liquor-and-talking-on-dining-table-close-up-photo-696218/">https://www.pexels.com/photo/people-drinking-liquor-and-talking-on-dining-table-close-up-photo-696218/</a> (& <a href="https://pixabay.com/sound-effects/very-busy-bar-19107/">https://pixabay.com/sound-effects/very-busy-bar-19107/</a> )
4b. At the bar with classmates (negative attitude)	

5a. The next morning - with bar (positive attitude)	<a href="https://www.pexels.com/photo/crop-woman-snoozing-alarm-on-smartphone-7622520/">https://www.pexels.com/photo/crop-woman-snoozing-alarm-on-smartphone-7622520/</a> (& <a href="https://pixabay.com/sound-effects/alarm-clock-short-6402/">https://pixabay.com/sound-effects/alarm-clock-short-6402/</a> )
5b. The next morning - no bar (positive attitude)	
5c. The next morning - with bar (negative attitude)	
5d. The next morning - no bar (negative attitude)	
6. Group IM chat (negative attitude)	<a href="https://www.pexels.com/photo/close-up-view-of-man-texting-on-phone-10376167/">https://www.pexels.com/photo/close-up-view-of-man-texting-on-phone-10376167/</a>
7. Dr Smith's e-mail	n/a
8a. Checking out the pay	<a href="https://www.pexels.com/photo/unrecognizable-man-browsing-smartphone-on-bed-7674820/">https://www.pexels.com/photo/unrecognizable-man-browsing-smartphone-on-bed-7674820/</a>
Closing	<a href="https://www.pexels.com/photo/coffee-machine-on-white-kitchen-counter-4993062/">https://www.pexels.com/photo/coffee-machine-on-white-kitchen-counter-4993062/</a>
<b>LEVEL 2: What will the future hold?</b>	
Opening	<a href="https://pixabay.com/photos/application-apply-now-english-3690356/">https://pixabay.com/photos/application-apply-now-english-3690356/</a>
8b. Checking out the internships	<a href="https://www.pexels.com/photo/flowers-in-vase-placed-near-bed-with-netbook-planners-and-cup-of-coffee-6177653/">https://www.pexels.com/photo/flowers-in-vase-placed-near-bed-with-netbook-planners-and-cup-of-coffee-6177653/</a>
9. Language data analyst description	n/a
10. Language data scientist description	n/a
11. Language data manager description	n/a

12. Language project manager description	n/a
13. Filling in the application	<a href="https://www.pexels.com/photo/modern-workplace-with-laptop-in-light-room-6636293/">https://www.pexels.com/photo/modern-workplace-with-laptop-in-light-room-6636293/</a>
14. TASK: Write motivation letter for internship	n/a
15. Application received pop up	n/a (& Pixabay pop sound effect)
16. Waiting for the interview appointment	n/a
Closing	<a href="https://pixabay.com/photos/e-mail-news-envelope-message-1903444/">https://pixabay.com/photos/e-mail-news-envelope-message-1903444/</a>
<b>LEVEL 3: Your very first job interview!</b>	
Opening	<a href="https://www.pexels.com/photo/man-walking-on-sidewalk-near-people-standing-and-sitting-beside-curtain-wall-building-34092/">https://www.pexels.com/photo/man-walking-on-sidewalk-near-people-standing-and-sitting-beside-curtain-wall-building-34092/</a>
17. Interview booked	<a href="https://www.pexels.com/photo/red-and-white-number-5-5417838/">https://www.pexels.com/photo/red-and-white-number-5-5417838/</a>
18. Prepping for the interview	<a href="https://www.pexels.com/photo/silver-macbook-pro-on-tabletop-1967535/">https://www.pexels.com/photo/silver-macbook-pro-on-tabletop-1967535/</a>
19. Dr Smith's post application e-mail laptop	n/a
20a. In the waiting room	<a href="https://www.pexels.com/@roxanne-minnish-2936023/">https://www.pexels.com/@roxanne-minnish-2936023/</a>
20b. In the waiting room	
21a. An unexpected encounter (prepped)	<a href="https://www.pexels.com/photo/hand-of-man-on-shoulder-of-player-7544308/">https://www.pexels.com/photo/hand-of-man-on-shoulder-of-player-7544308/</a>
21b. An unexpected encounter (unprepped)	

22. Dr Smith's post application e-mail mobile	n/a
23. How could you have missed the e-mail?	<a href="https://www.pexels.com/photo/person-holding-a-smartphone-5744250/">https://www.pexels.com/photo/person-holding-a-smartphone-5744250/</a>
24. The interview	<a href="https://www.pexels.com/photo/a-businessman-looking-at-the-documents-5439374/">https://www.pexels.com/photo/a-businessman-looking-at-the-documents-5439374/</a>
25a. The interview continues	<a href="https://www.pexels.com/photo/woman-having-a-job-interview-5439141/">https://www.pexels.com/photo/woman-having-a-job-interview-5439141/</a>
25b. The interview concluding	<a href="https://www.pexels.com/photo/man-gets-the-job-5439381/">https://www.pexels.com/photo/man-gets-the-job-5439381/</a>
26. Post-interview meetup	<a href="https://www.pexels.com/photo/top-view-photo-of-restaurant-2253643/">https://www.pexels.com/photo/top-view-photo-of-restaurant-2253643/</a>
27. Hanging out with Becky	<a href="https://www.pexels.com/photo/sliced-sandwich-350343/">https://www.pexels.com/photo/sliced-sandwich-350343/</a>
28. Clara joins you too	<a href="https://www.pexels.com/photo/faceless-bartender-with-portafilter-near-coffee-machine-5825390/">https://www.pexels.com/photo/faceless-bartender-with-portafilter-near-coffee-machine-5825390/</a>
29a. Hanging out with Becky and Clara	<a href="https://www.pexels.com/es-es/foto/cafe-taza-mujer-sin-rostro-6954156/">https://www.pexels.com/es-es/foto/cafe-taza-mujer-sin-rostro-6954156/</a>
29b. Hanging out with Becky and Clara 2	<a href="https://www.pexels.com/photo/positive-asian-women-chatting-and-having-coffee-in-outdoor-cafe-5709240/">https://www.pexels.com/photo/positive-asian-women-chatting-and-having-coffee-in-outdoor-cafe-5709240/</a>
30. Making plans for the night	<a href="https://pixabay.com/vectors/mute-sound-volume-silent-audio-6694067/">https://pixabay.com/vectors/mute-sound-volume-silent-audio-6694067/</a>
31. Getting the response from LangX?	<a href="https://www.pexels.com/photo/woman-using-modern-cellphone-5902266/">https://www.pexels.com/photo/woman-using-modern-cellphone-5902266/</a>
Closing	<a href="https://www.pexels.com/photo/email-blocks-on-gray-surface-1591062/">https://www.pexels.com/photo/email-blocks-on-gray-surface-1591062/</a>
<b>LEVEL 4: So, what will it be?</b>	
Opening	<a href="https://www.pexels.com/photo/question-mark-on-chalk-board-356079/">https://www.pexels.com/photo/question-mark-on-chalk-board-356079/</a>

32. E-mail from LangX	n/a
33. You got it!	<a href="https://www.pexels.com/photo/low-angle-photo-of-fireworks-949592/">https://www.pexels.com/photo/low-angle-photo-of-fireworks-949592/</a>
34. How did the others fare?	<a href="https://www.pexels.com/photo/close-up-view-of-man-texting-on-phone-10376167/">https://www.pexels.com/photo/close-up-view-of-man-texting-on-phone-10376167/</a>
35. Celebrating the internship	<a href="https://www.pexels.com/photo/person-pouring-champagne-on-champagne-flutes-3171770/">https://www.pexels.com/photo/person-pouring-champagne-on-champagne-flutes-3171770/</a>
36. Did you check the link?	<a href="https://www.pexels.com/photo/dinnerware-on-table-541216/">https://www.pexels.com/photo/dinnerware-on-table-541216/</a>
37. You have a choice to make	<a href="https://www.pexels.com/id-id/foto/makanan-meja-sisa-tembak-an-vertikal-11689772/">https://www.pexels.com/id-id/foto/makanan-meja-sisa-tembak-an-vertikal-11689772/</a>
38. What did the others choose?	<a href="https://www.pexels.com/photo/woman-with-a-sign-4669113/">https://www.pexels.com/photo/woman-with-a-sign-4669113/</a>
39a. Time for a break (Language path)	<a href="https://www.pexels.com/photo/several-bags-on-trolley-near-train-in-station-1170187/">https://www.pexels.com/photo/several-bags-on-trolley-near-train-in-station-1170187/</a>
39b. Time for a break (NLP path)	
40. Time to make the choice	<a href="https://www.pexels.com/photo/turned-off-macbook-pro-near-a-cup-of-coffee-1422292/">https://www.pexels.com/photo/turned-off-macbook-pro-near-a-cup-of-coffee-1422292/</a>
Closing (Language path)	<a href="https://www.pexels.com/photo/yellow-die-cast-miniature-van-on-brown-sand-386000/">https://www.pexels.com/photo/yellow-die-cast-miniature-van-on-brown-sand-386000/</a>
Closing (NLP path)	
<b>LEVEL 5a: Your first day as an language specialist!</b>	
Opening	<a href="https://www.pexels.com/photo/macbook-pro-684314/">https://www.pexels.com/photo/macbook-pro-684314/</a>
L1. First day at the office	<a href="https://www.pexels.com/photo/cheerful-woman-showing-blank-name-tag-7319161/">https://www.pexels.com/photo/cheerful-woman-showing-blank-name-tag-7319161/</a>
L2. Getting the tour of the premises	<a href="https://www.pexels.com/photo/two-men-having-conversation-next-to-desk-in-building-7070/">https://www.pexels.com/photo/two-men-having-conversation-next-to-desk-in-building-7070/</a>

L3. Spotting Philip	<a href="https://www.pexels.com/video/business-people-sharing-a-laptop-5438718/">https://www.pexels.com/video/business-people-sharing-a-laptop-5438718/</a>
L4. Meeting your manager	<a href="https://www.pexels.com/photo/close-up-photo-of-woman-in-beige-dress-holding-a-laptop-8134101/">https://www.pexels.com/photo/close-up-photo-of-woman-in-beige-dress-holding-a-laptop-8134101/</a>
L5. What's next?	<a href="https://www.pexels.com/photo/a-woman-holding-a-laptop-8134187/">https://www.pexels.com/photo/a-woman-holding-a-laptop-8134187/</a>
L6. Your first daily briefing meeting	<a href="https://www.pexels.com/photo/a-group-of-people-having-conversation-together-8134234/">https://www.pexels.com/photo/a-group-of-people-having-conversation-together-8134234/</a>
L7. Induction	<a href="https://www.pexels.com/photo/woman-in-beige-blazer-holding-a-pen-and-note-book-8133956/">https://www.pexels.com/photo/woman-in-beige-blazer-holding-a-pen-and-note-book-8133956/</a>
L8. Meeting your mentor	<a href="https://www.pexels.com/photo/people-shaking-hands-3746957/">https://www.pexels.com/photo/people-shaking-hands-3746957/</a>
L9. Time for lunch	<a href="https://www.pexels.com/photo/woman-in-beige-coat-while-using-laptop-8133953/">https://www.pexels.com/photo/woman-in-beige-coat-while-using-laptop-8133953/</a>
L10. A team-building game	<a href="https://www.pexels.com/photo/white-jigsaw-puzzle-illustration-262488/">https://www.pexels.com/photo/white-jigsaw-puzzle-illustration-262488/</a>
L11. Your team for the game	<a href="https://www.pexels.com/photo/workmates-in-a-team-huddle-7845454/">https://www.pexels.com/photo/workmates-in-a-team-huddle-7845454/</a>
L12. Round one	n/a
L13. Round two	n/a
L14. The results are in	<a href="https://pixabay.com/photos/puzzle-last-part-joining-together-3223941/">https://pixabay.com/photos/puzzle-last-part-joining-together-3223941/</a>
L15. Information from corpora: Co-occurrence (Learning content)	n/a
Closing	<a href="https://www.pexels.com/photo/people-sitting-listening-to-the-speaker-8761540/">https://www.pexels.com/photo/people-sitting-listening-to-the-speaker-8761540/</a>
<b>LEVEL 6a: Your first specialist task</b>	
Opening	<a href="https://www.pexels.com/photo/a-close-up-shot-of-paper-clipped-documents-7054757/">https://www.pexels.com/photo/a-close-up-shot-of-paper-clipped-documents-7054757/</a>

L16. Getting assigned to a project	<a href="https://www.pexels.com/photo/photo-of-people-having-meeting-3183186/">https://www.pexels.com/photo/photo-of-people-having-meeting-3183186/</a>
L17. Getting assigned to a project 2	<a href="https://www.pexels.com/photo/people-discuss-about-graphs-and-rates-3184292/">https://www.pexels.com/photo/people-discuss-about-graphs-and-rates-3184292/</a>
L18. Checking out your notes for task 1	n/a
L19. Principles of corpus design and construction (Learning content)	n/a
L20a. Hans gets in touch (with class notes)	<a href="https://www.pexels.com/photo/turned-on-silver-imac-and-magic-keyboard-with-mouse-326508/">https://www.pexels.com/photo/turned-on-silver-imac-and-magic-keyboard-with-mouse-326508/</a>
L20b. Hans gets in touch (without class notes)	
L21. Task 1-1	n/a
L22. Task 1-2	n/a
L23. Task 1-3	n/a
L24. Task 1-4	n/a
L25. Task 1-5	n/a
L26. Hans gives you feedback	<a href="https://www.pexels.com/photo/windows-flat-screen-computer-monitor-beside-two-silver-macbooks-370470/">https://www.pexels.com/photo/windows-flat-screen-computer-monitor-beside-two-silver-macbooks-370470/</a>
Closing	<a href="https://www.pexels.com/photo/man-stressed-at-work-8278873/">https://www.pexels.com/photo/man-stressed-at-work-8278873/</a>
<b>LEVEL 7a: A friend in need...</b>	
Opening	<a href="https://pixabay.com/photos/opinion-poll-opinion-polling-survey-1594962/">https://pixabay.com/photos/opinion-poll-opinion-polling-survey-1594962/</a>
L27. Paul's crisis 1	<a href="https://www.pexels.com/photo/man-talking-to-woman-using-her-laptop-3747161/">https://www.pexels.com/photo/man-talking-to-woman-using-her-laptop-3747161/</a>

L28. Paul's crisis 2	<a href="https://www.pexels.com/photo/close-up-photography-of-eyeglasses-near-crump-&lt;br/&gt;led-papers-963056/">https://www.pexels.com/photo/close-up-photography-of-eyeglasses-near-crump- led-papers-963056/</a>
L29. Becky's intervention	<a href="https://www.pexels.com/photo/man-and-woman-sitting-beside-table-3205567/">https://www.pexels.com/photo/man-and-woman-sitting-beside-table-3205567/</a>
L30. Advising Paul	
L31. List from sociolinguistics class (Learning content)	n/a
L32. Task 2-1	n/a
L33. Task 2-2	n/a
L34. Task 2-3	n/a
L35a. Task 2-4 (Paul disagrees)	<a href="https://www.pexels.com/photo/person-holding-pen-and-notebook-530024/">https://www.pexels.com/photo/person-holding-pen-and-notebook-530024/</a>
L35b. Task 2-4 (Paul agrees)	
Closing	<a href="https://www.pexels.com/photo/light-sign-typography-lighting-519/">https://www.pexels.com/photo/light-sign-typography-lighting-519/</a>
<b>LEVEL 8a: Working directly with the boss!</b>	
Opening	<a href="https://www.pexels.com/photo/white-sony-over-ear-headphones-358103/">https://www.pexels.com/photo/white-sony-over-ear-headphones-358103/</a>
L36. Getting assigned to another project	<a href="https://www.pexels.com/photo/team-meeting-8134002/">https://www.pexels.com/photo/team-meeting-8134002/</a>
L37. Getting assigned to another project 2	<a href="https://www.pexels.com/video/female-boss-writing-a-line-graph-on-the-board-8&lt;br/&gt;141402/">https://www.pexels.com/video/female-boss-writing-a-line-graph-on-the-board-8 141402/</a>
L38. Volunteering to another project	<a href="https://www.pexels.com/video/female-boss-writing-a-line-graph-on-the-board-8&lt;br/&gt;141402/">https://www.pexels.com/video/female-boss-writing-a-line-graph-on-the-board-8 141402/</a>
L39. Volunteering to another project 2	<a href="https://www.pexels.com/photo/a-person-typing-on-a-laptop-8134169/">https://www.pexels.com/photo/a-person-typing-on-a-laptop-8134169/</a>

L40. Getting volunteered to another project	<a href="https://www.pexels.com/video/female-boss-writing-a-line-graph-on-the-board-8141402/">https://www.pexels.com/video/female-boss-writing-a-line-graph-on-the-board-8141402/</a>
L41. Maria explains what you have to do	<a href="https://www.pexels.com/photo/a-person-typing-on-a-laptop-8134169/">https://www.pexels.com/photo/a-person-typing-on-a-laptop-8134169/</a>
L42. Task instructions	<a href="https://www.pexels.com/photo/person-holding-apple-magic-mouse-392018/">https://www.pexels.com/photo/person-holding-apple-magic-mouse-392018/</a>
L43. Task 4-1a	n/a
L44. Task 4-1b	n/a
L45. Task 4-2a	n/a
L46. Task 4-2b	n/a
Closing	<a href="https://www.pexels.com/photo/aroma-beverage-breakfast-brown-414628/">https://www.pexels.com/photo/aroma-beverage-breakfast-brown-414628/</a>
<b>LEVEL 9a: How much data can you handle?</b>	
Opening	<a href="https://www.pexels.com/photo/multicolored-abacus-photography-1019470/">https://www.pexels.com/photo/multicolored-abacus-photography-1019470/</a>
L47. Volunteering to yet another project	<a href="https://www.pexels.com/photo/female-hand-against-wall-with-shadow-4314604/">https://www.pexels.com/photo/female-hand-against-wall-with-shadow-4314604/</a>
L48. Volunteering to yet another project 2	<a href="https://www.pexels.com/photo/a-woman-holding-a-notepad-8133890/">https://www.pexels.com/photo/a-woman-holding-a-notepad-8133890/</a>
L49. Volunteering to yet another project 3	<a href="https://www.pexels.com/photo/a-woman-holding-a-pen-and-notepad-8133893/">https://www.pexels.com/photo/a-woman-holding-a-pen-and-notepad-8133893/</a>
L50. Language data science: On counting (Learning content)	n/a
L51. Task 5-1	n/a
L52. Task 5-2	n/a
L53. Task 5-3	n/a

L54. Task 5-4	n/a
Closing	<a href="https://www.pexels.com/photo/sliced-tomato-and-avocado-on-white-plate-1143754/">https://www.pexels.com/photo/sliced-tomato-and-avocado-on-white-plate-1143754/</a>
<b>LEVEL 10a: Can you handle more?</b>	
Opening	<a href="https://www.pexels.com/photo/macbook-pro-beside-spiral-notebook-669616/">https://www.pexels.com/photo/macbook-pro-beside-spiral-notebook-669616/</a>
L55. Lunch on Monday	<a href="https://www.pexels.com/photo/vegetable-salad-on-white-plate-2862154/">https://www.pexels.com/photo/vegetable-salad-on-white-plate-2862154/</a>
L56. Post-lunch	<a href="https://www.pexels.com/photo/a-person-holding-a-script-7968074/">https://www.pexels.com/photo/a-person-holding-a-script-7968074/</a>
L57. E-mail from Maria	n/a
L58. You can't escape the new task	n/a
L59a. The new task (immediate accept)	<a href="https://www.pexels.com/photo/close-up-photo-person-pointing-at-a-statistical-graph-in-a-clipboard-6592681/">https://www.pexels.com/photo/close-up-photo-person-pointing-at-a-statistical-graph-in-a-clipboard-6592681/</a>
L59b. The new task (accept after Sara's message)	
L60. Task 6-1	n/a
L61. Task 6-2	n/a
L62. Task 6-3	n/a
L63. Task 6-4	n/a
L64. Task 6-5	n/a
Closing	<a href="https://www.pexels.com/photo/person-wearing-pair-of-black-slides-1272328/">https://www.pexels.com/photo/person-wearing-pair-of-black-slides-1272328/</a>
<b>LEVEL 11a: Time to test your precision...</b>	
Opening	<a href="https://www.pexels.com/photo/woman-at-work-322335/">https://www.pexels.com/photo/woman-at-work-322335/</a>

L65. A new task on Wednesday	<a href="https://www.pexels.com/photo/a-woman-having-coffee-while-looking-at-a-document-8134243/">https://www.pexels.com/photo/a-woman-having-coffee-while-looking-at-a-document-8134243/</a>
L66. A new task on Wednesday 2	<a href="https://www.pexels.com/photo/woman-in-brown-dress-holding-white-ceramic-mug-8134244/">https://www.pexels.com/photo/woman-in-brown-dress-holding-white-ceramic-mug-8134244/</a>
L67. A new task on Wednesday 3	<a href="https://www.pexels.com/video/two-women-shake-hands-together-8141652/">https://www.pexels.com/video/two-women-shake-hands-together-8141652/</a>
L68. What's the task?	<a href="https://www.pexels.com/photo/silver-magic-keyboard-1109543/">https://www.pexels.com/photo/silver-magic-keyboard-1109543/</a>
L69. Task 7-1	n/a
L70. A new task on Wednesday 4	<a href="https://www.pexels.com/photo/silver-magic-keyboard-1109543/">https://www.pexels.com/photo/silver-magic-keyboard-1109543/</a>
L71. Task 7-2	n/a
L72. Task 7-3	n/a
Closing	<a href="https://www.pexels.com/photo/a-black-pencil-beside-an-iphone-8251146/">https://www.pexels.com/photo/a-black-pencil-beside-an-iphone-8251146/</a>
<b>LEVEL 12a: What the future holds...</b>	
Opening	<a href="https://www.pexels.com/photo/future-sign-3192640/">https://www.pexels.com/photo/future-sign-3192640/</a>
L73. Getting lunch with Hans	<a href="https://www.pexels.com/photo/hotdog-bun-on-brown-surface-1633526/">https://www.pexels.com/photo/hotdog-bun-on-brown-surface-1633526/</a>
L74. Getting a message from Maria	<a href="https://pixabay.com/photos/smartphone-hands-tap-h-mobile-2454611/">https://pixabay.com/photos/smartphone-hands-tap-h-mobile-2454611/</a>
L75. One-to-one meeting with Maria	<a href="https://www.pexels.com/video/two-people-using-laptop-8141303/">https://www.pexels.com/video/two-people-using-laptop-8141303/</a>
L76. The permanent post offer	<a href="https://www.pexels.com/video/two-people-using-laptop-8141303/">https://www.pexels.com/video/two-people-using-laptop-8141303/</a>
L77. Bumping into Paul	<a href="https://www.pexels.com/photo/man-in-red-button-up-shirt-3777931/">https://www.pexels.com/photo/man-in-red-button-up-shirt-3777931/</a>
L78. Paul tries to convince you	<a href="https://www.pexels.com/photo/man-in-red-button-up-shirt-3777929/">https://www.pexels.com/photo/man-in-red-button-up-shirt-3777929/</a>

L79. Applying for the permanent post	<a href="https://pixabay.com/photos/application-keyboard-apply-now-3695107/">https://pixabay.com/photos/application-keyboard-apply-now-3695107/</a>
L80. TASK: Write motivation letter for the permanent post	n/a
L81. Application received pop up	n/a (& Pixabay pop sound effect)
Closing	<a href="https://www.pexels.com/photo/congratulations-text-on-white-surface-with-confetti-8127309/">https://www.pexels.com/photo/congratulations-text-on-white-surface-with-confetti-8127309/</a>
<b>LEVEL 5b: Your first day as an NLP specialist!</b>	
Opening	<a href="https://www.pexels.com/photo/text-2061168/">https://www.pexels.com/photo/text-2061168/</a>
N1. First day at the office	<a href="https://www.pexels.com/photo/cheerful-woman-showing-blank-name-tag-7319161/">https://www.pexels.com/photo/cheerful-woman-showing-blank-name-tag-7319161/</a>
N2. Getting the tour of the premises	<a href="https://www.pexels.com/photo/two-men-having-conversation-next-to-desk-in-building-7070/">https://www.pexels.com/photo/two-men-having-conversation-next-to-desk-in-building-7070/</a>
N3. Spotting Philip	<a href="https://www.pexels.com/video/business-people-sharing-a-laptop-5438718/">https://www.pexels.com/video/business-people-sharing-a-laptop-5438718/</a>
N4. Your first daily briefing meeting	<a href="https://www.pexels.com/photo/a-businessman-sitting-on-a-chair-while-looking-afar-5439400/">https://www.pexels.com/photo/a-businessman-sitting-on-a-chair-while-looking-afar-5439400/</a>
N5. Induction	<a href="https://www.pexels.com/photo/men-in-corporate-attire-busy-working-in-front-of-their-laptops-5439398/">https://www.pexels.com/photo/men-in-corporate-attire-busy-working-in-front-of-their-laptops-5439398/</a>
N6. Meeting your mentor	<a href="https://www.pexels.com/photo/people-shaking-hands-3746957/">https://www.pexels.com/photo/people-shaking-hands-3746957/</a>
N7. Time for lunch	<a href="https://www.pexels.com/photo/professional-man-in-gray-suit-5439168/">https://www.pexels.com/photo/professional-man-in-gray-suit-5439168/</a>
N8. A team-building game	<a href="https://www.pexels.com/photo/white-jigsaw-puzzle-illustration-262488/">https://www.pexels.com/photo/white-jigsaw-puzzle-illustration-262488/</a>
N9. Your team for the game	<a href="https://www.pexels.com/photo/workmates-in-a-team-huddle-7845454/">https://www.pexels.com/photo/workmates-in-a-team-huddle-7845454/</a>

N10. Round one	n/a
N11. Round two	n/a
N12. The results are in	<a href="https://pixabay.com/photos/puzzle-last-part-joining-together-3223941/">https://pixabay.com/photos/puzzle-last-part-joining-together-3223941/</a>
Closing	<a href="https://www.pexels.com/photo/people-sitting-listening-to-the-speaker-8761540/">https://www.pexels.com/photo/people-sitting-listening-to-the-speaker-8761540/</a>
<b>LEVEL 6b: Finally! Some real work...</b>	
Opening	<a href="https://www.pexels.com/photo/person-wearing-black-watch-holding-macbook-pro-574080/">https://www.pexels.com/photo/person-wearing-black-watch-holding-macbook-pro-574080/</a>
N13. Getting assigned to a client	<a href="https://www.pexels.com/photo/photo-of-people-having-meeting-3183186/">https://www.pexels.com/photo/photo-of-people-having-meeting-3183186/</a>
N14. Talking about the client	<a href="https://www.pexels.com/photo/man-holding-a-pen-pointing-on-a-document-8439659/">https://www.pexels.com/photo/man-holding-a-pen-pointing-on-a-document-8439659/</a>
N15. Connection issues	<a href="https://www.pexels.com/photo/man-in-blue-dress-shirt-sitting-beside-woman-in-blue-long-sleeve-shirt-5439468/">https://www.pexels.com/photo/man-in-blue-dress-shirt-sitting-beside-woman-in-blue-long-sleeve-shirt-5439468/</a>
N16. Video with task 1	n/a
N17. Getting it right 1	<a href="https://pixabay.com/vectors/ok-check-to-do-agenda-icon-symbol-1976099/">https://pixabay.com/vectors/ok-check-to-do-agenda-icon-symbol-1976099/</a>
N18. Getting another task	<a href="https://www.pexels.com/photo/person-in-front-of-table-using-macbook-1181465/">https://www.pexels.com/photo/person-in-front-of-table-using-macbook-1181465/</a>
N19. Video with task 2	n/a
N20. Getting it right 2	<a href="https://pixabay.com/vectors/ok-check-to-do-agenda-icon-symbol-1976099/">https://pixabay.com/vectors/ok-check-to-do-agenda-icon-symbol-1976099/</a>
N21. Chatting with Georgia 1	<a href="https://www.pexels.com/photo/a-person-doing-a-thumbs-up-9486675/">https://www.pexels.com/photo/a-person-doing-a-thumbs-up-9486675/</a>
N22. Getting on with the task	<a href="https://www.pexels.com/photo/people-discuss-about-graphs-and-rates-3184292/">https://www.pexels.com/photo/people-discuss-about-graphs-and-rates-3184292/</a>
N24. Video with task 3	n/a
N25a. Getting it right 3a	<a href="https://pixabay.com/vectors/ok-check-to-do-agenda-icon-symbol-1976099/">https://pixabay.com/vectors/ok-check-to-do-agenda-icon-symbol-1976099/</a>

N25b. Getting it right 3b	
N26. The meeting continues	<a href="https://www.pexels.com/photo/white-sony-over-ear-headphones-358103/">https://www.pexels.com/photo/white-sony-over-ear-headphones-358103/</a>
N27. Chatting with Georgia 2	<a href="https://pixabay.com/photos/hands-heart-finger-symbol-love-7679387/">https://pixabay.com/photos/hands-heart-finger-symbol-love-7679387/</a>
Closing	<a href="https://www.pexels.com/photo/person-wearing-pair-of-black-slides-1272328/">https://www.pexels.com/photo/person-wearing-pair-of-black-slides-1272328/</a>
<b>LEVEL 7b: Perhaps, your most important decision...</b>	
Opening	<a href="https://www.pexels.com/photo/future-sign-3192640/">https://www.pexels.com/photo/future-sign-3192640/</a>
N28. Getting lunch with Georgia	<a href="https://www.pexels.com/photo/hotdog-bun-on-brown-surface-1633526/">https://www.pexels.com/photo/hotdog-bun-on-brown-surface-1633526/</a>
N29. Getting a message from Philip	<a href="https://pixabay.com/photos/smartphone-hands-tap-h-mobile-2454611/">https://pixabay.com/photos/smartphone-hands-tap-h-mobile-2454611/</a>
N30. One-to-one meeting with Philip	<a href="https://www.pexels.com/photo/man-in-red-plaid-shirt-contemplating-5702417/">https://www.pexels.com/photo/man-in-red-plaid-shirt-contemplating-5702417/</a>
N31. The permanent post offer	<a href="https://www.pexels.com/video/person-sitting-on-a-chair-5704183/">https://www.pexels.com/video/person-sitting-on-a-chair-5704183/</a>
N32. Bumping into Paul	<a href="https://www.pexels.com/photo/man-in-red-button-up-shirt-3777931/">https://www.pexels.com/photo/man-in-red-button-up-shirt-3777931/</a>
N33. Paul tries to convince you	<a href="https://www.pexels.com/photo/man-in-red-button-up-shirt-3777929/">https://www.pexels.com/photo/man-in-red-button-up-shirt-3777929/</a>
N34. Applying for the permanent post	<a href="https://pixabay.com/photos/application-keyboard-apply-now-3695107/">https://pixabay.com/photos/application-keyboard-apply-now-3695107/</a>
N35. TASK: Write motivation letter for the permanent post	n/a
N36. Application received pop up	n/a (& Pixabay pop sound effect)

Closing	<a href="https://www.pexels.com/photo/congratulations-text-on-white-surface-with-confetti-8127309/">https://www.pexels.com/photo/congratulations-text-on-white-surface-with-confetti-8127309/</a>
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