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## **Maria Potes Barbas**

Higher School of Education – Polytechnic Institute of Santarém  
<https://orcid.org/0000-0001-8598-1650>

## **Pedro Matos**

Higher School of Education – Polytechnic Institute of Santarém  
<https://orcid.org/0000-0001-6650-0604>

# **“Flavours in Ead” an Innovative Concept and Approach for an Intuitive and Effective E-learning Course**

## **Abstract**

E-learning has changed significantly since the pandemic. In the early months of 2020, our whole educational framework suffered from several side effects that needed to be corrected to ensure an effective and alternative way of teaching. Therefore, new methods and methodologies needed to be outlined to address the students’ learning needs. Regarding Higher Education, students and teachers were used to a more traditional way of teaching, yet strategies had to be implemented to maintain teaching in a higher level of performance. Thus, a methodology called “Flavours in EaD” was developed. This strategy comprised several actions and steps on how to build a robust, intuitive, and flexible E-learning course in the COVID-19 Pandemic time. What will be presented and analysed in this work as a way of disseminating the research and methodological process related to the “Flavours in Ead” strategy is based on the thought process involving the preparation, verification, development and implementation phase.

**Key words:** E-learning, COVID-19, Innovative digital teaching, Learning methodologies

## Introduction

The COVID-19 pandemic has brought numerous challenges to education on a global scale. It is estimated that during the peak pandemic crisis period, 1.5 billion students, which consists of 89.4% total of enrolled learners, (UNESCO, 2021) experienced various challenges with regard to their learning. From disruptions to the transition from face-to-face lessons to a digital format, were just a few examples of changes that this new context raised that needed to be properly addressed. This situation also occurred on a large scale in Higher Education. Despite being a more autonomous learning context, where students have more advanced transversal competences, it was a challenge that also needed to be tackled. This sector had to “reinvent” itself in a short space of time by applying an initial methodology of “emergency online education” (Marinoni, Van’t Land & Jensen, 2020) ensuring a way for students to maintain their teaching activities and remain active in the development of academic projects according to the different curricular units of each course.

Another important aspect to take into consideration is the digital factor that this paradigm shift has initiated, called a “digital revolution” (Strielkowski, 2020). This concept meant that Higher Education had already foreseen that this kind of challenges could arise and, in order to ensure flexible teaching, the transition to fully digital or online formats was foreseen. Still on this aspect, this transition to digital, which is a mandatory need given the pandemic context, gave rise to an innovative aspect based on the learning behavior of the students who were inserted in this context. This involves the autonomous learning phenomenon, in which students adopted a self-regulated learning (SRL) method, in which students are active and responsible for their own learning process as well as being knowledgeable, self-aware, and able to select their own approach to learning (Gonzalez, De La Rubia, Hincz, Comas-Lopez, Subirats, Fort, & Sacha, 2020). Finally, it is important to highlight the efforts, measures and strategies that have been implemented by different frameworks, governments, and organizations as effective solutions to support this transition from face-to-face education to digital education. These are some of the axes that guided and delimited this study and, consequently, led to an understanding of the steps to be implemented in the development of a robust, intuitive, and flexible online learning environment for higher education students.

## Research area

The research problem that this study addresses begins with the period of the pandemic crisis, specifically with regard to Higher Education and all the changes that had to be made to ensure a good learning system for students. This context resulted in a paradigm shift for face-to-face teaching, specifically, in the strategies implemented to ensure an effective transition to a fully digital teaching regime. Thus, this study seeks to understand which strategies and methodologies are to be used in the construction of courses mediated entirely through the digital medium. In order to do so, the following research question was applied:

*How to build a robust, intuitive, and flexible course model for Higher Education students in an E-learning format?*

## Research Focus

The focus of the research is on two central aspects. The first is related to the changes in the educational sector, more specifically, in Higher Education, due to the emergence of the COVID-19 pandemic and the need to move from face-to-face teaching to a fully digitally mediated education. The second fundamental aspect involves the design and analysis of innovative online teaching strategies, namely E-learning and how it should be developed and structured in order to ensure a robust, intuitive and flexible teaching-learning context. However, this study is not an exclusive phenomenon and is part of an evolving framework where several components are equally important to analyse and understand. In fact, these components determine the level of effectiveness of the digital media used, as they are verified through the digital, pedagogical, and social component to the extent that it is important to know how these parameters fit and, respectively, evaluate each other in the framework of online teaching strategies. An online teaching strategy, specifically, mediated by E-learning platforms refers to a more autonomous and self-critical position of the students. In this way, it is important to establish tools that monitor the progress and learning curve of the students. These can be applied separately from the E-learning system used (e.g., Moodle) or integrated directly into the platform through initial or intermediate evaluation methods.

## Methodology of Research

The Design Science Research methodology was adopted since the idea was to analyze different component models and initiatives that help solving the defined Problem of Research question: *“How to build a robust, intuitive, and flexible course model for Higher Education students in E-learning format?”*. Using this methodology, traditional solutions will be broached for each problem identified and based on them; alternative new models and concepts will be found. This methodology also allows the use of both qualitative and quantitative methods and techniques. The Design Science Research comprehends three different phases. The first phase is related to the understanding of the problem in a broad perspective, so a mixture between some literature review and in-depth qualitative research, by means of working with our focus group – higher education students, made these techniques an effective strategy to understand deeply the context, needs, requirements and expectations of all the involved actors on the development of a robust, flexible, and intuitive E-learning course model. The second phase is related to the design of the possible solutions, so it again used some literature review and benchmarking research techniques to investigate and compare best practices and initiatives that can meet the defined problem, as well possible indicators, and metrics of results. All the findings put together a set of pinpoints which allowed the research project team on using a Participatory Design approach, facilitating the ability to design and iterate the E-learning model’s architecture, with the methods, practices, resources, technologies, and communication & engagement processes to be proposed to be part of the model. The third phase was related to the evaluation of the solution by other subjects. Besides the directly involved participants, which in this case were the students as focus group, this study also included a small group of E-learning experts in order to introduce a broader concept of quality concerning the teaching-learning scenarios that digital learning encompasses. Therefore, in the first stage, the usage of an Expert Panel served as a way of evaluating and refining the various elements that composed the model and validated the more suitable KPIs. Applying at least three rounds of the Delphi Method Technique, the goal of this phase was to achieve an expert consensus about the adequacy and comprehensiveness of the proposed E-learning model and its indicators. In the second stage, after the iterative evaluation by the experts, we applied the developed model in a small study case to evaluate and measure its effectiveness towards the students and teachers. The Knowledge Management approaches, as After-Action Review and Lessons Learned Sessions were also used to share experiences and to register and preserve the knowledge gained.

## General Background of Research

Besides the Design Science Research methodology used in the different steps of this project it is important to mention that this study was also integrated in an Action-Research frame of mind, which allowed for a broader engagement in the study and its Problem of Research as well as several areas of influence present in it. Firstly, because it was found useful to apply an exploratory research design methodology since it is one of the most appropriate methods to tackle the diversity of intricacies that online learning brings to the Higher Education learning system, especially in the wake of the COVID-19 pandemic. Exploratory studies are a valuable means of asking questions to establish baseline information that could be later used as a launch pad for further research (Ali, 2020). This more comprehensive approach of an exploratory research design methodology allows a more comprehensive space for comparative analyses, meta-analyses and a systematic follow-up of initial results that may change over the time of the study or investigation. This flexibility is particularly important given that this study is part of a totally innovative and digital project where needs are constantly changing and altering. In addition to the technical challenges, there are also those of a more social and pedagogical nature that require an equally adequate follow-up. As such, the use of dynamic methods and methodologies permeable to change becomes an added value for the execution of this type of project.

## Sample of Research

The research sample is composed of a set of subjects who, directly or indirectly, contributed to the implementation of this project. Thus, we defined students as the most active and participatory focus group in this study, since they were the intervening users or, in this case, the “*trysumers*” of the innovative E-learning course model developed as a robust, flexible, and intuitive online teaching strategy. However, in addition to this more deterministic focus group, other subjects were considered important for project evaluation and monitoring, especially, regarding the quality of the model and the pedagogical and methodological guides developed for the implementation of the E-learning model. For this purpose, the integration of a small group of experts, with the role of evaluators and consultants, became an adequate process in the management of this project.

## Instrument and Procedures

The instruments and procedures that accompany this type of study are always one of the most fundamental aspects for the success of any project of an innovative and digital nature. In order to build a robust, flexible and intuitive E-learning model in a Higher Education context, it was necessary to define a dynamic and comprehensive structure, specifically, one that encompassed a set of diverse parameters and aimed at compressing the technological, social, and pedagogical components of the students and teachers involved in the model. Furthermore, it was important that this structure included, as a basis, a multi-level vision eliminating some reductive input. As such, the model was used that was inspired by transversal competences and that included a strong digital component (Calvani, Cartelli, Fini, & Ranieri, 2008):

- **Multidimensional** – the model should imply an adapted integration by the student and the teacher, relating the spectrum of skills, knowledge, cognitive, relational, creative and socio-cultural processes of each individual.
- **Complex** – the e-learning model cannot be based only on individual tests; some aspects that link more to the acquisition of social and technical skills of students should be addressed in different ways taking into account the student's background and way of learning.
- **Interconnected** – the model cannot depend only on key competences which overlap with the transversal competences acquired or developed by the students. It must be diverse and comprehensive.
- **Sensitive to the participants' socio-cultural context** – the model cannot adopt only a standard or single format of digital learning delivery. This should not be limiting but rather permeable to change and adaptability. Because the concept of learning changes for each student and varies according to the student's level in relation to the course contents.

These were some of the instruments and procedures implemented throughout the study in order to guarantee a viable and tangible structure for the development of the E-learning model and its integration in digital teaching in Higher Education contexts.

## Data Analysis

The analysis of data of a more quantitative nature, even if including a qualitative aspect, was included in this study through the implementation of an evaluation

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questionnaire. Thus, from the main focus group project, one hundred students were selected as a representative sample. It should be noted that among these students there were two different study cycles, Licentiate’s Degree and Vocational Technical Higher Courses respectively. The questionnaire applied was based on a simple Likert Scale, designating a frequency interval from 1 to 5, where **1-Never**, **2-Rarely**, **3-Sometimes**, **4-Often**, and **5-Always**. In order to ensure an adequate and pertinent evaluation of the developed E-learning model, five parameters were defined as diagnostic criteria to be chosen by the students. These parameters were based only on the digital component that the E-learning model integrated, namely: i) progress bar; ii) educational videos; iii) quizzes; iv) immersive ecosystems; v) digital assessment. These were considered the most important elements of the model in the sense that they encompass the various phases of student interaction and learning when inserted in an online teaching context.

Table 1  
*Summary of the results about the most useful tools in the E-learning mode*

	Never	Rarely	Sometimes	Often	Always
Progress Bar	0	43	34	13	10
Educational videos	0	4	7	33	56
Quizzes	0	37	32	17	14
Immersive ecosystems	0	7	9	40	44
Digital Assessment	0	13	18	36	33

Sources: Own work

After collecting and analyzing the data from the 100 students surveyed, we found out that:

- No student indicated “Never” as a choice for the evaluation of the parameters, which, in a first observation, leads us to believe that the tools used in the E-learning model showed usefulness for the students.
- Of the 100 students surveyed, 43% indicated that they rarely used the “progress bar” as one of the tools in their work and classes. There was only 10% use of this parameter by the students which translates into a little used and less useful component for the students’ learning path.
- Of the 100 surveyed students, 56% demonstrate the importance that “Educational videos” have in their online teaching pathway, being particularly useful learning tools in the E-learning model.
- Of the 100 students surveyed, 69% indicate that they use the “Quizzes” component only “Rarely” or “Sometimes” leading to a negligible use in the students’ online learning process.

- e) Of the 100 students surveyed, 84% indicate the use of “Immersive Ecosystems” as one of the best practices for E-learning teaching models. These are intuitive and interactive tools for the students’ learning process. The most verifiable data were “Often” and “Always”.
- f) Of the 100 students surveyed, 69% stated that they use the “Digital Assessment” component often and even always as a way of monitoring and evaluating their progress in online learning pathways.

By way of a brief conclusion, we can see that this model of E-learning developed in a Higher Education context presents a considerable level of success. This is because the students have shown the ability, from the different technological components used, to highlight the most appropriate and beneficial ones for their online learning process. Furthermore, this data helps to confirm the position that a fully digitally mediated teaching format can be viable and competitive for students. It even results in higher levels of performance from them when they are involved in different activities that integrate digital interaction.

## Results of Research

The results of this study and its project are varied in nature. Initially, there was data analysis on the effectiveness and evaluation of the developed E-learning model. The importance of understanding whether the digital components used were found to be useful, relevant, intuitive, and appropriate to the different learning profiles of the students followed. Next, this study enabled the search, study, and critical analysis on a varied set of hypotheses that needed a direct answer. In this case, it included the most appropriate and rapid solution to the research question that led to this project: How to build a robust, intuitive, and flexible course model for Higher Education students in the E-learning format?

Now, following this logic it was necessary to establish a conceptual framework for the main answers acquired, which included:

- a) **The preparation of a model or course in E-learning** that must be able to implement a teaching provided with physical separation between the participants in the educational process in which the interaction is supported by online teams of academic and technological support; the curricular design allows access without limit of time and place to the contents and contexts; and the pedagogical model is designed in virtual environments.
- b) **The empowerment of human resources** with the application of a specialized teaching staff with proven pedagogical training in Distance Education; special-



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ized technicians in computer science, web design, LMS and new technologies; specialized technicians in the design of curricular units in e-learning or blended learning modality; multidisciplinary teams to support the construction of original resources and the implementation of curricular units in LMS.

- c) **The implementation of technological means and materials** such as Technological infrastructures and systems; LMS; Integrated academic data management systems; Digital documentation centers providing free access to digital libraries and multimedia resource centers; Research centers in methodologies and technologies applied to online education for experimentation and development of innovative solutions both in the pedagogical and technological fields.
- d) **The creation of a pedagogical model and curricular design** that encompasses the modular conception of contents, methodologies and activities aiming at the flexibility of adequate access to the curricular plan and collaborative processes.
- e) **The structuring of a curricular plan** that values personalized learning paths and with the preferential option for optional units.
- f) **The definition of a formative and summative assessment model** (face-to-face or virtual) focused on the student’s personalized evaluation.
- g) **The flexibility of a curricular development** in which the teaching methodologies applied are those recommended in the Institution’s Virtual Pedagogical Model. Teaching is student-centered, favoring two different but complementary ways of working: an individual and collaborative one.

These were some of the points to consider in the results of this study. In order to implement a robust, intuitive and flexible model in E-learning it is important to ensure a set of mechanisms that facilitate and streamline the process. It is not just a question of transitioning or maintaining educational services in an online format, but rather of developing and implementing a multi-level model in which it is verified that online teaching is a solution that is often practical and that, at times of a sudden change, becomes viable as an educational strategy.

## Conclusions

A pedagogical strategy based on innovative axes such as online teaching is a challenge present in the information society which intersects with other priority points that also mark presence in this transition from face-to-face teaching to a fully technology-mediated teaching. The truth is that, after this study, one of the initial conclusions that we can observe is the fact that Higher Education Institutions must prepare, develop and, in most cases, adopt a robust digital teaching strategy.

However, it has to be borne in mind that other obstacles may arise raising the need to continue to ensure the entire educational offer of an Educational Institution even if in an alternative format. Another aspect to be highlighted from this study, as a conclusion, is that these types of projects continue to be an evolving concern. That is why, we cannot only base ourselves on the development of practical, innovative, and digital solutions, supported by more or less complete E-learning systems, but also on the understanding of the critical factors that lead to the use of this type of an alternative in education. As such, we relate the identification of these critical factors as a priority, specifically, those that affect the usage of an e-learning system and should be taken by universities into the future plans, namely: (1) technological factors, (2) e-learning system quality factors, (3) cultural aspects, (4) self-efficacy factors and (5) trust factors (Almaiah, Al-Khasawneh & Althunibat, 2020).

Another important conclusion to gain from this study is the multi-level factor that the E-learning model built had to assume. This has become one of the most impactful factors for the success of this type of E-learning model and the development of this study. Besides this, we cannot neglect the importance of maintaining this type of strategies in the post-pandemic period as an experience of innovation for the pedagogical conceptual framework.

Regarding the answer to the research question: How to build a robust, intuitive, and flexible course model for Higher Education students in E-learning format?, we were able to understand that the methodology to be adopted involves implementing multi-dimensional instruments and processes, interconnected and sensitive to the students' socio-cultural context in order to guarantee a high comprehensiveness and accessibility of the model. As for the technological component, with regard to the tools and resources to be used in E-learning models, we identify as priorities and most useful the (i) educational videos, (ii) immersive ecosystems and the (iii) digital assessment of students. Finally, regarding the conceptual framework that should accompany the construction of this E-learning model for Higher Education contexts, it should guarantee the following parameters: a) The preparation of a model or course in E-learning; b) The empowerment of human resources; c) The implementation of technological means and materials; d) The creation of a pedagogical model and curricular design; e) The structuring of a curricular plan; f) The definition of a formative and summative assessment model; g) The flexibility of a curricular development. In short, E-learning seems to be the forthcoming trend, and can be considered a way of learning best suited for everyone (Radha, Mahalakshmi, Kumar, & Saravanakumar, 2020).

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### **„Flavours in Ead” innowacyjna koncepcja i podejście do intuicyjnego i efektywnego kursu E-learningowego**

#### Streszczenie

W ciągu ostatnich kilku lat e-learning przeszedł wielki zwrot. W szczególności, od momentu uderzenia pandemii, w pierwszych miesiącach 2020 roku, nasze całe ramy edukacyjne ucierpiały z powodu kilku skutków ubocznych, które musiały zostać skorygowane, aby zapewnić skuteczny i alternatywny sposób nauczania. W związku z tym należało nakreślić nowe metody i metodologie,

aby zaspokoić potrzeby uczniów w zakresie uczenia się. Jeśli chodzi o szkolnictwo wyższe, studenci i nauczyciele byli przyzwyczajeni do bardziej tradycyjnego sposobu nauczania, jednak należało wdrożyć strategię, aby utrzymać nauczanie na wyższym poziomie. W związku z tym opracowano metodologię nazwaną „Smaki w EDO”. Strategia ta składała się z kilku działań i kroków, jak zbudować solidny, intuicyjny i elastyczny kurs E-learningowy w czasie pandemii Covid-19. Od procesu myślowego do fazy przygotowania, weryfikacji, rozwoju i wdrożenia, aspekty te zostaną przedstawione i przeanalizowane w tej pracy jako sposób na rozpowszechnienie badań i procesu metodologicznego osiągniętego w związku ze strategią „Flavours in Ead”.

**Słowa kluczowe:** E-learning, Covid-19, Innowacyjne nauczanie cyfrowe, Metodologie nauczania

Мария Потес Барбас, Педро Матос

**„Flavours in Ead” – инновационная концепция и подход  
для интуитивного и эффективного курса электронного обучения**

**Аннотация**

За последние несколько лет электронное обучение приняло большой оборот. В частности, после пандемии, разразившейся в первые месяцы 2020 года, вся наша система образования пострадала от нескольких побочных эффектов, которые необходимо было устранить, чтобы обеспечить эффективный и альтернативный способ обучения. Поэтому необходимо было разработать новые методы и методологии для удовлетворения потребностей студентов в обучении. Что касается высшего образования, то студенты и преподаватели привыкли к более традиционному способу преподавания, однако необходимо было внедрить стратегии для поддержания преподавания на более высоком уровне. Таким образом, была разработана методология под названием “Ароматы в Ead” (“Flavours in Ead”). Эта стратегия включала в себя несколько действий и шагов по созданию надежного, интуитивно понятного и гибкого курса электронного обучения в условиях пандемии Covid-19. В данной работе будут представлены и проанализированы все аспекты, начиная с процесса обдумывания и заканчивая этапами подготовки, проверки, разработки и внедрения, как способ распространения результатов исследования и методологического процесса, связанного со стратегией “Ароматы в Ead” (“Flavours in Ead”).

**Ключевые слова:** Электронное обучение, Covid-19, Инновационное цифровое обучение, Методологии обучения

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## **„Flavours in Ead” un concepto y un enfoque innovadores para un curso de E-learning intuitivo y eficaz**

### R e s u m e n

El aprendizaje electrónico dio un gran giro en los últimos años. En particular, desde que se produjo la pandemia, en los primeros meses de 2020, todo nuestro marco educativo sufrió varios efectos secundarios que debían corregirse para garantizar una forma de enseñanza eficaz y alternativa. Por lo tanto, había que perfilar nuevos métodos y metodologías para atender las necesidades de aprendizaje de los alumnos. En lo que respecta a la educación superior, los estudiantes y los profesores estaban acostumbrados a la forma más tradicional de enseñar, pero había que aplicar estrategias para mantener la enseñanza en un nivel superior de rendimiento. Así, se desarrolló una metodología denominada „Sabores en EaD”. Esta estrategia comprendía varias acciones y pasos sobre cómo construir un curso de E-learning robusto, intuitivo y flexible en el tiempo de la pandemia de Covid-19. Desde el proceso de reflexión hasta las fases de preparación, verificación, desarrollo e implementación, estos aspectos se presentarán y analizarán en este trabajo como una forma de difundir el proceso de investigación y metodológico logrado en relación con la estrategia „Sabores en Ead”.

**P a l a b r a s c l a v e:** E-learning, Covid-19, Enseñanza digital innovadora, Metodologías de aprendizaje