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The FLUENT Model for Flexible, Inclusive, and Competency-Based Course Planning

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Abstract

This paper presents the FLUENT model, Flexible Universal Education Model for a New Hybrid Teaching, a framework for university course planning developed within the Erasmus+ project through a design-based research approach. Rooted in empirical evidence from systematic literature reviews (PRISMA), stakeholder interviews, and cross-national surveys, the model addresses the growing complexity of hybrid education by promoting flexibility, personalization, interaction, collaboration, and adaptability across both face-to-face and online contexts. Underpinned by constructivist and cognitive psychology theories, FLUENT views learning as an active process of knowledge construction, emphasizing competency-based learning and structured learning paths. Its key structural elements - time, space, technology, student agency, and teacher reflectivity - guide the design of reversible, inclusive, and context-sensitive learning environments. A core innovation is the model's online-first perspective, which ensures readiness for shifting teaching modalities and diverse learner needs. Accompanying the model is the FLUENT curriculum and a modular online course (launching Winter 2024/25), offering practical implementation tools for educators. Developed collaboratively by institutions across four European countries, FLUENT offers a scalable, research-informed approach to hybrid pedagogy - equipping faculty to design engaging, student-centred courses and respond effectively to contemporary challenges in higher education.

Keywords: Hybrid Teaching; Design-Based Research; Course Planning; Flexible Learning; Student Agency; Competency-Based Education

Introduction

The emergence of hybrid teaching, integrating face-to-face and online instruction, represents a major shift in contemporary education. Linder (2017) describes hybrid pedagogy as a „method of teaching that utilizes technology to create a variety of learning environments for students," highlighting its role in fostering flexibility and accommodating diverse learner needs. Although hybrid approaches have been explored for over two decades (Sands, 2002; Rasmussen, 2003; Rogers et al., 2003), the COVID-19 pandemic accelerated their widespread adoption, pushing institutions to rethink instructional design. While hybrid formats offer increased accessibility, personalization, and inclusivity, they

also introduce complexities that require adaptive, student-centered course planning (Detienne et al., 2018; Raes et al., 2020; Abuhassna et al., 2022).

In response to these challenges, a consortium comprising the Vienna University of Economics and Business, Friedrich-Alexander-Universität Erlangen-Nürnberg, Tallinn University, and Open University of Catalonia developed the FLUENT model as part of the Erasmus+ project *Flexible Universal Education for a New Hybrid*. This initiative produced a conceptual framework, curriculum, and modular online course to support university educators in designing flexible, engaging, and competency-based learning environments.

This paper presents the theoretical foundations, structural components, and pedagogical strategies of the FLUENT model. It also evaluates its practical relevance and outlines the design-based research methodology behind its development. The paper concludes with a discussion of the collaborative process and the model's potential for broader implementation in higher education.

Methodology

To inform the design of the FLUENT model, a mixed-method research methodology was employed. A systematic literature review following the PRISMA framework identified 116 relevant studies. Concurrently, a survey was conducted in partner countries (Austria, Estonia, Germany, and Spain) examining faculty skills and training needs in hybrid/blended teaching. The survey was based on two theoretical frameworks: Redecker et al.'s (2011) "Future of Learning" pillars and Meyer's (2007) six structural pillars of teaching. In-depth interviews with university administrators further explored teaching challenges, diversity, student needs, and emerging technologies such as AI and chatbots. Supplementary institutional documents and training guidelines were also reviewed and synthesized to support the analysis.

The development of the FLUENT model and curriculum followed the principles of a design-based research (DBR) approach, characterized by its flexible, iterative nature. Following McKenney and Reeves' (2013) widely cited DBR framework, the process was structured into three core phases, reflecting the cyclical and practice-oriented essence of the methodology (Euler, 2014).

Theoretical Framework

The FLUENT model is grounded in several key educational theories, most notably constructivism, competency-based education (CBE), and principles of student-centred learning. Constructivist theory, championed by Piaget and Vygotsky, posits that learners actively construct knowledge through experience and reflection, a philosophy directly embedded in FLUENT's emphasis on active engagement and reflective practice. Likewise, competency-based education shifts the instructional focus from time-based progress to demonstrable mastery of skills, which FLUENT operationalizes through structured learning outcomes and modular assessment. In addition, the model integrates student agency - the capacity of learners to set goals, make decisions, and take ownership of their learning paths - as an essential component of hybrid teaching. By aligning course design with these theoretical pillars, the FLUENT model encourages educators to adopt a flexible yet purposeful approach that supports diverse learners and promotes meaningful learning experiences in digitally mediated contexts.

The FLUENT model synthesizes evidence-based course design principles shown to enhance student learning, performance, and deep understanding. It also incorporates planning structures that help transform course complexity into coherent design (Anderson & Krathwohl, 2001; Meyer, 2007). Building on Sangrà's (2021) concepts of reversible design, time management, and self-regulation, the model integrates additional dimensions - flexibility, personalization, interaction, and collaboration - derived from Redecker et al.'s (2011) future-oriented learning scenarios. Together, these elements broaden didactic possibilities and support the evaluation of course plans for contemporary relevance.

Understanding the FLUENT Model

The FLUENT model integrates empirically grounded course design principles that enhance learning outcomes (Rosenshine & Stevens, 1986), deepen student understanding (Biggs, 1996), and support precise course planning (Anderson & Krathwohl, 2001).

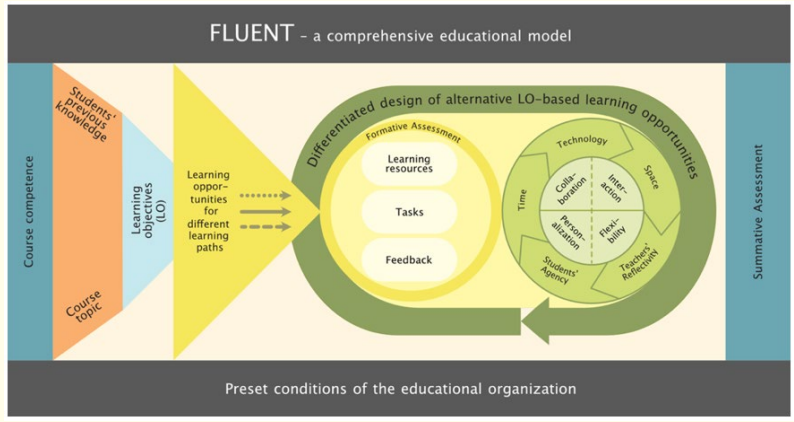

Figure 1: The FLUENT-model – a comprehensive educational model for course planning (Geissler et al., 2024).

It emphasizes key structuring elements that transform course complexity into coherent design (Meyer, 2007), guiding educators in effective planning. Central to the model are Sangrà's (2021) principles of reversible design, time management, and self-regulation, which foster learner autonomy and adaptability. Additionally, it incorporates forward-looking elements from Redecker et al. (2011) on *The Future of Learning*, such as flexibility, personalisation, interaction, and collaboration. These dimensions broaden didactic possibilities and support the evaluation of course plans for relevance and innovation (Geissler et al., 2024).

The FLUENT model is structured around three core components:

1. ***Underlying elements*** - theoretical foundations for effective learning and planning grounded in cognitive learning theory.
2. ***Structuring elements*** - tools for organizing and guiding course design.
3. ***Extending elements*** - components that enable flexible pedagogical strategies and ensure curricular contemporaneity, and that promote pedagogical innovation and adaptability (Geissler et al., 2024; Sangrà et al., 2024).

Underlying Elements

Every course design begins with foundational steps to guide the planning process. These include: 1) Clarifying institutional conditions (e.g., attendance rules, delivery modes), 2) Defining course content and intended competences, 3) Assessing students' prior knowledge, and 4) Designing a suitable summative assessment. These aspects are often informed by curricular guidelines, study plans, or institutional frameworks. Once established, these elements provide the basis for engaging the FLUENT model's deeper pedagogical layers.

The model adopts a cognitive psychology-informed view of learning as an active, constructive process (Anderson & Krathwohl, 2001). Building on this, the FLUENT model encourages the creation of interconnected learning opportunities that form alternative learning paths, allowing students to achieve course competences through differentiated routes tailored to their individual needs. Each path is structured around: 1) Clearly defined competences to be achieved, 2) Learning objectives serving as milestones, and 3) A sequence of learning opportunities adapted to varying needs in terms of time, space, and technology.

While didactic designs cannot be directly derived from psychological learning models, information processing theory highlights the need for appropriate learning resources, tasks, and feedback - especially for achieving higher cognitive outcomes. Anderson and Krathwohl's (2001) taxonomy table serves as a tool, offering cognitive process dimensions that help identify the didactic elements

needed to reach targeted learning levels (Dreyfus & Dreyfus, 1986). Depending on complexity, these designs can also support formative assessment, guiding students in tracking their progress.

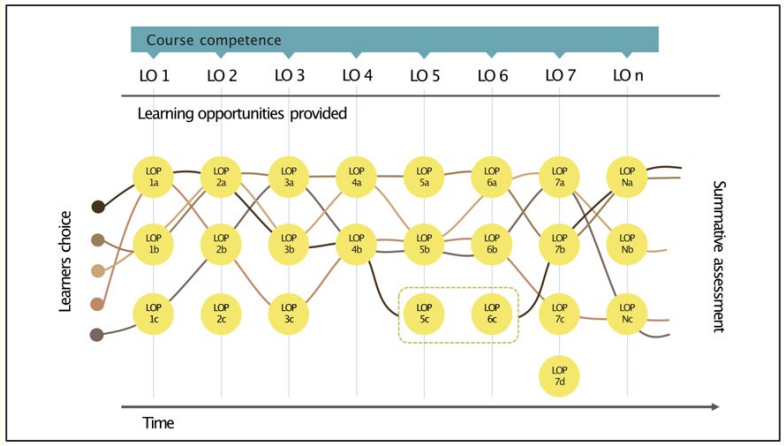

Figure 2: Alternative learning pathways that can be chosen by students for different learning opportunities and are designed in relation to the FLUENT model (Geissler et al., 2024).

These principles align with Biggs' (1996) constructive alignment, which emphasizes the coherent integration of learning objectives, teaching activities, and assessments to foster deep understanding.

Structuring Elements

The FLUENT model supports university teachers in designing courses that integrate face-to-face and online teaching, enhancing student learning through flexible and inclusive learning environments. By leveraging technology, it transcends traditional spatial and temporal limitations, enabling a broader range of learning opportunities. However, this increased flexibility also adds complexity, requiring thoughtful course planning based on key structuring elements.

The model identifies five essential structuring elements that guide planning and implementation:

1. ***Time***. Refers to the design of synchronous and asynchronous learning formats. Decoupling teaching and learning time allows for greater flexibility, enabling students to engage at their own pace and teachers to create more adaptable learning opportunities.
2. ***Space***. Encompasses physical, virtual, and hybrid learning environments. Detaching teaching from a fixed location expands possibilities for interaction and accessibility, aligning with diverse learning contexts.
3. ***Technology***. Shapes how learning occurs through digital platforms, communication tools, and online resources. It facilitates collaboration, access to materials, and supports innovative teaching formats.
4. ***Student Agency***. Highlights the importance of student autonomy, responsibility, and self-regulation in the learning process (Bandura, 2001; Mäenpää et al., 2020). Empowering students to co-design and actively engage fosters motivation and deeper learning.
5. ***Teacher Reflectivity***. Involves ongoing critical self-evaluation of teaching practices. Teachers are encouraged to question their design choices - regarding flexibility, collaboration, resource use, and alignment with learning objectives - and adapt to students' needs and contexts accordingly (Geissler et al., 2024; Sangrà et al., 2024).

By incorporating these elements, the FLUENT model offers a structured yet flexible framework for developing meaningful, student-centered, and context-responsive hybrid learning experiences.

Extending Elements

There is no single ideal learning opportunity; effective learning can result from various designs that accommodate diverse student needs and behaviours. The extending elements of the FLUENT model reflect this flexibility and are grounded in Redecker et al.'s (2011) four key principles for the future of learning: flexibility, personalization, interaction, and collaboration.

- ***Flexibility*** involves offering varied learning modes, allowing students to choose when, where, and how they learn, thus accommodating different schedules and learning contexts.
- ***Personalization*** tailors content and learning experiences to individual preferences, increasing engagement and fostering learner autonomy.
- ***Interaction*** facilitates meaningful engagement with content, instructors, and peers, promoting active learning through communication and feedback.
- ***Collaboration*** emphasizes goal-oriented group work and knowledge co-construction, encouraging shared responsibility and deeper learning (Geissler et al., 2024; Sangrà et al., 2024).

By integrating these principles, the FLUENT model enables the design of diverse yet equally impactful learning opportunities that support active, personalized, and collaborative student experiences.

Key Features of the FLUENT Model

The FLUENT model offers a distinctive framework for designing hybrid courses, setting itself apart through four core features:

1. ***Online-First Perspective***. Unlike traditional hybrid models that layer online elements onto face-to-face formats, FLUENT begins with an online-first design. This perspective unlocks the full potential of digital pedagogy, ensuring that learning outcomes are met regardless of delivery mode.
2. ***Reversibility***. Every learning opportunity is developed in at least two formats - one optimized for online, the other for face-to-face. Both versions align with the same learning objectives, enabling seamless transitions between modalities in response to changing circumstances.
3. ***Inclusivity***. FLUENT explicitly addresses the needs of both in-person and remote learners. It integrates insights from distance education research, emphasizing autonomy, support, and self-regulated learning. This ensures all students - regardless of location - are supported effectively.
4. ***Adaptability***. The model is designed to be technologically accessible, requiring only internet access and a Learning Management System (LMS) or equivalent platform. It accommodates varying institutional infrastructures and supports educators in making context-sensitive design decisions (Geissler et al., 2024; Sangrà et al., 2024).

FLUENT Curriculum and Course

Derived from the FLUENT model, the FLUENT curriculum forms the foundation for structure modular online course designed for university teaching staff. The course spans 60 learning hours and offers two participation modes:

- ***Mode A***: Engagement with course content and basic tasks.
- ***Mode B***: Active application of FLUENT principles by designing at least two learning opportunities for one's own course.

The curriculum follows a learning-outcome-oriented approach and is divided into seven modules, each linked to distinct aspects of the FLUENT model:

Module	*Core Topics*	*Learning Outcomes (Mode A)*	*Learning Outcomes (Mode B)*
Introduction to FLUENT	Paradigms, teachers' roles, model overview	Summarize key assumptions	Same as Mode A
Didactic Triangle	Competences, prior knowledge, objectives, content selection	Explain core didactic elements	Formulate competences, objectives, and select content
Information Processing	Learning opportunities, resources, tasks, feedback	Explain components	Design resources, tasks, and feedback strategies
Assessment	Formative/summative assessment, constructive alignment	Describe key concepts	Develop aligned evaluation tools
Structuring Elements I	Time, space, technology	Define structural elements	Apply them in course design
Structuring Elements II	Student agency, teacher reflectivity	Explain agency and reflectivity	Promote student autonomy & apply teacher reflection tools
Extending Elements	Flexibility, personalization, interaction, collaboration	Describe future learning principles	Design options supporting these principles

Table 1: The Modules and distinct aspects of the FLUENT model.

The FLUENT model and curriculum were collaboratively developed over 16 months by a team from four European universities using McKenney & Reeves' (2013) design-based research (DBR) framework. Key phases included 1) Analysis & Exploration, 2) Design & Construction, 3) Evaluation & Reflection, 4) Curriculum Development, 5) Finalization. This process ensured that the FLUENT curriculum is both theoretically grounded and practically applicable, offering scalable solutions for hybrid course planning in higher education (Geissler et al., 2024).

The FLUENT Modular Online Course is designed to support university educators in navigating the complexity of modern teaching environments by offering structured guidance based on the FLUENT curriculum. It is delivered via Moodle and includes eight modules: an introductory module, six content modules based on the FLUENT model, and a concluding module.

The journey begins with an introductory module that familiarizes participants with the course's objectives, technical requirements, and participation options. This opening section also presents recommended learning paths, helping participants navigate the course according to their needs and goals. Following the introduction, participants engage with seven content modules, each addressing a key aspect of the FLUENT model - such as course design, creating learning opportunities, aligning assessments, integrating structuring elements like time and technology, and fostering student agency. These modules follow a consistent and pedagogically rich structure.

Each module opens with a problem-oriented introduction, presented through a video dialogue between two fictional instructors, Susan and Chris. This storytelling approach illustrates a realistic teaching challenge, encouraging participants to reflect on their own experiences in a personal learning diary. This is followed by the information transfer phase, where the module's core content is presented using videos, screencasts, readings, and optional add-ons for deeper exploration.

To consolidate understanding, participants complete application tasks. These begin with multiple-choice questions aimed at reinforcing comprehension (based on the Anderson/Krathwohl taxonomy's "Understanding" level). Each module culminates in a task at the "Apply" level, inviting learners to write didactic notes that demonstrate how they might implement the content in their own teaching contexts (Geissler et al., 2024).

Feedback is an integral part of the course design. While comprehension tasks receive automated responses, the more complex applied tasks are reviewed by the course instructor, who provides individualized feedback to support further development.

The course concludes with a final module, which includes a sample course on Scientific Writing. This example illustrates how to implement the FLUENT model in practice and shows what assignment submissions might look like under the two participation modes. This module also includes a range of practical resources, such as downloadable templates and digital badges.

To accommodate different levels of engagement, the course offers a dual-track certification system. Participants in the Participation Track receive a Certificate of Attendance upon completing Modules 1-7. Those choosing the Graduation Track engage more deeply by collaborating with a peer and submitting a revised, FLUENT-based course plan in Module 8. Successful completion earns them full FLUENT Certification.

Discussion and Conclusions

The FLUENT model and its accompanying curriculum were developed using a design-based research (DBR) approach, as framed by McKenney & Reeves (2013). This framework integrates research and development to generate both practical innovations and theoretical insights.

The 16-month ERASMUS+ project brought together eight researchers from four European universities. Recognizing that educational innovation is inherently creative and shaped by subjective viewpoints, the team embraced a process that allowed for flexibility, iteration, and reflection rather than rigid planning.

Early phases, particularly "Design and Construction," revealed critical incidents stemming from differing assumptions and perspectives on course design in higher education. These challenges underscored the importance of inter-subjectivity - the ability to align understandings across individuals. Drawing on Sloane's (2017) framework, the team addressed this through:

- ***Empathy*** - reflecting on one another's perspectives;
- ***Textuality*** - articulating assumptions explicitly;
- ***Second-person perspective*** - recognizing diverse viewpoints (Geissler et al., 2024).

These strategies were reinforced through collaborative glossary development, regular meetings, and the co-creation of an "argumentative grammar" to guide discourse. Documentation of the process helped reveal implicit biases and supported transparent, inclusive collaboration.

A range of didactic-intervention methods - including critical dialogues, think-alouds, prototyping, and pro-con debates - fostered creativity and theoretical grounding. With the curriculum and modular online training course now fully developed, the FLUENT model is ready for real-world implementation. Initial testing will help refine key components before broader deployment across higher education institutions.

FLUENT offers a research-informed, flexible framework for hybrid and online course planning. It empowers educators to design competency-based, student-centered learning environments that are adaptable across diverse institutional and learner contexts. Its emphasis on reflection, adaptability, and instructional coherence makes it especially suited for 21st-century educational challenges.

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