essense

Education Supporting
Smart Environments for
Seniors

ESSENSE Educational Philosophy

2nd Version

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Content

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1. Introduction

The ESSENSE Project aims to design and develop a common curriculum and learning approach on Building Information Modelling (hereinafter, BIM) towards the design, construction and management of public and private environments for older adults. This will meet the learning needs of Higher Education students from building related sectors (architects, engineers, BIM managers, facility managers and interior designers) that will be relevant to the labour market and meet societal needs. As Europe's ageing population increases, highly trained practitioners and a skilled workforce will be required to meet the growing demand for sustainable built environments to accommodate the needs of older adults.

Why compose an **Educational Philosophy**?

- To dialogue and articulate our individual educational and subject/discipline/professional values
- To negotiate and agreed a shared vision and some common values

It is important to draw together the programme team to consider/discuss the views on how students learn best in this context. Having an Educational Philosophy Statement at the beginning of the programme can communicate to students and academic staff the rationale for particular teaching, learning and assessment approaches, the lack of a common educational philosophy impacted on programme sequencing and coherence.

The Educational Philosophy is a Statement agreed by the team that sets out the programme's purpose, education and professional values, the nature of the learning environment for students and the key approaches to teaching, learning and assessments. The starting point of a programme design is; I) The consideration of the needs and resources of the programme, II) The development and articulation of a vision and set of values that the programme team aspire to, and III) Early consideration of students needs and pathways.

For the development of this Educational Philosophy Draft Delivery we have supported our Statement on the following questions:

- Are we being clear and concise?
- Are we being critical?
- Are we engaging the students in problem solving?
- Is our approach working?
- What is it we hope that students will have learned, that will still be there and have value, several years after the course is over?
- What would the students have to do to convince us that they have achieved these learning outcomes?

2. Educational Philosophy Statement

- *Are we being clear and concise?*

We find that students spend considerable effort establishing a mental picture, or a mental model, of how the parts of a system (such as a computer program) interact. These mental models serve as simplified causal models that help the student design new systems and predict the behaviour of those systems. Our role as content producer is to monitor how students are building mental models, by asking them questions about BIM's behaviour and building's needs, the characteristics and needs of the older adults, people with disabilities and their caretakers. The programme shall not only provide knowledge and also have an impact on the current attitude of cooperation and communication. BIM does not only mean using a software, it also means the required cooperation of all parties involved in the planning phase (In order to have a global view of the building itself, the time and financial limits and the target group needs). From an ICT point of view, we should select the digital learning tools appropriate for the target group of students (video lectures, presentations and slides, gamification, real-time evaluation) and then, create effective and efficient learning materials in order to avoid the risk of the students being disinterested. From a methodical point of view, BIM is about thematically linking the areas of optimised planning, execution and management in the real estate sector, so that a continuous and plannable planning and working method is possible.

- *Are we being critical?*

The fact that technology takes the form it does is sometimes believed to be the result of a series of best decisions, and that there is no good alternative. Architects should not adopt this attitude; instead, they should understand that if different decisions were made in the past, then we may have more appropriate technology available to us today. With this historical context in mind, we believe we can help students apply critical analysis in the future and be the driving forces behind new, appropriate technology. As BIM is a rather new approach and its concepts and tools are emerging and still evolving, the balance between theoretical considerations and practical approaches should consider the fundamental concepts to be taught and the skills and sources of lifelong learning that should be trained. Within the framework of ESSENSE, it is key to introduce to the students how the individual components of BIM interlock with each other in order to incorporate this technical expertise in the fields of Ambient Assisted Living, Smart Housing and seniors needs.

- *Are we engaging the students in problem solving?*

Due to the complex nature of buildings and techniques, computer-based problem solving is rarely a simple process. Solutions must be designed precisely. Typically, students must be taught how to engage in this type of problem solving. We will help students to learn how to design by engaging them in real-life problem solving. Even though students will have access to the tools to independently solve problems, it is *our* goal to motivate and encourage them, as well as to lead them to different outcomes so they would be able to create different mental models of

cause and effect related to specific problems. From our point of view, teaching should be centred on practical work and exams and evaluations should contain practical problems and project work. A major point of our Philosophy is to promote using BIM to create more suitable spaces for older adults. The students should be taught to centre the user in the process and provide suggestions to create healthy and comfortable buildings for future occupants. To achieve this, we rely on the Living Lab methodology, which enables active participation of users early in the process of designing or redesigning and validating projects, products, or services.

- *Is our approach working?*

We acknowledge that different students, and different groups of students learn in different ways. Some students or groups seem to prefer high-level overviews, while others want to know exactly how every component contributes to the bigger picture. Some prefer many small practice problems, while others enjoy working on larger projects. And some students prefer working in pairs while others perform best on their own. We facilitate these differences among students and groups by remaining observant and flexible. Students should primarily learn how to think in this specific field and how to approach problems. Additionally, we emphasize the importance of managing changes in any given project and focus on improving collaboration, communication, and task management. Working on real-life projects should be part of the programme in order to prepare students for transferring gained knowledge into practice.

- *What is it we hope that students will have learned, that will still be there and have value, several years after the course is over?*

After completing the course, we hope that students will be able to think critically and use various approaches in planning and designing buildings. As the need of both BIM knowledge and housing for older adults is increasing, students may have an advantage on the job market that can be supported by a special certificate. This developed approach in Smart Housing and older adults' needs will support students in making projects in these fields successfully. The following skills will stay with students long after completing the course: they will have up-to-date knowledge and capabilities to follow future developments, the ability to improve their technical skills, the competence to understand the interrelationship between the various disciplines, and being able to transfer their experience and knowledge into their daily practice. They will be able to understand and assimilate new facts effectively, and approach new problems by relying on the underlying theoretical principles.

- *What would the students have to do to convince us that they have achieved these learning outcomes?*

The students have to show they are able to effectively design with BIM including creating small elements to buildings, combining their knowledge of BIM workflows, building design, and the needs of older adults gained in this programme, demonstrating broad knowledge of a building as a whole They will need to approach problems from different points of view (e.g., electrical, plumbing, foundation, pilars …), combine guidelines and core concepts of BIM in individual or

group projects, and be able to lead large groups of professionals. Furthermore, they should be able to develop a BIM case study with their team and sketch the personal points that are important for their case, and present them in a wider context. Based on a real-life case, we can evaluate students' technical knowledge together with their soft skills, their capacity for collaboration, including considering information of all involved parties, open discussion, and group problem solving. The students should be able to face new problems by critically analysing each challenge and not copy existing solutions from previous problems.

Students from one training group should work together in a final project – each should be in a different role. They should develop a model digitally (i.e., using an IT-Tool) and physically (e.g., with paper or another modelling material). In the process, they should be confronted with real-life problems during the process and be encouraged to find appropriate solutions.

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