University of Tartu
Faculty of Social Sciences
Institute of Education
Curriculum of Educational Technology

Thomas Claeys

FROM RIPPLES TO WAVES: EXPLORING SOCIAL PROFESSIONAL DEVELOPMENT FOR IMPLEMENTING AND SUPPORTING EDUCATIONAL MULTIMEDIA TECHNOLOGIES IN HIGHER EDUCATION

MA thesis

Supervisor: Dr Emanuele Bardone

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Abstract

This thesis explores the influence of social structures within higher education institutions (HEI's) on the adoption and use of educational multimedia technologies and the role of professional development in ensuring their successful implementation and support. The research problem addresses the limited understanding of effective creation, editing, management and delivery of educational video materials. The study aims to unveil how HEI's can successfully implement and support these technologies through social structures and professional development. A literature review and in-depth interviews of four HEI's are employed as research methods. Key findings highlight the necessity of a multifaceted approach involving multiple stakeholders, effective communication channels and professional development opportunities. The study concludes by recommending that HEI's establish dedicated support teams, use online resources and foster a networked practice to facilitate the successful implementation of educational multimedia technologies.

Keywords*: educational multimedia technologies, higher education institutions, centres for teaching and learning, social professional development mechanisms, implementation, diffusion of innovations, support*

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1 Introduction

The use of multimedia technologies in higher education institutions is a rapidly growing phenomenon, providing new avenues for enhanced teaching, learning and assessment. This has, however, challenged these complex organisations and their respective structures, roles and cultures. To ensure that educational multimedia technologies are successfully implemented and supported, it is crucial to understand the social professional development mechanisms used by higher education institutions to create, edit, manage and deliver modern learning materials. This thesis will explore the social professional development mechanisms used in higher education institutions for the implementation and support of educational video technologies.

This chapter serves as the introduction to the thesis, providing a review of the research. It starts with the context and background of the topic, then examines the research problem and aims, objectives and questions associated with it. The chapter further outlines the significance of the study and its potential impact for the deployment and support of educational multimedia technologies in higher education institutions (HEI's). It acknowledges the study's limitations and provides an overview of the upcoming chapters.

1.1 Background

Traditional teaching methods are under increasing pressure from both internal and external forces (P. Goodyear, 2015; Gustavsson et al., 2019; Omelicheva & Avdeyeva, 2008). Students bring a variety of demands and expectations, and teachers are under more pressure than ever before. Simultaneously, expectations of what students should be able to do continue to rise. Technological advancements create new opportunities for teaching and learning, increasing the rate of change. In higher education institutions (HEI's), the use of educational technologies and multimedia learning and teaching is becoming increasingly important (Sherer & Shea, 2011). With the introduction of new video creation, editing, management, and delivery tools, there is a greater emphasis on institutionalising these technologies. However, because of the various platforms, roles, structures and cultures within these organisations, implementing new technologies in higher education institutions can be difficult.

Educational developers throughout institutions and Centres for Teaching and Learning have changed in nature (Gibbs, 2013) and must now navigate complex structures and use interpersonal skills to facilitate the implementation of new educational technologies. This evolution has led to the emergence of third space professionals (Whitchurch, 2008): change

agents who can operate from the top-down and bottom-up to promote innovation and facilitate the use of new educational technologies. To do so, they must be skilled in communicating with a broad audience to implement these innovations effectively. Diffusion theory and innovation development therefore can be used to gain insight into the adoption and use of new technologies in organisations. In the context of higher education institutions, these theories can help to uncover the various factors that influence the implementation and support of educational video technologies across teaching and supporting faculty.

Considering the importance of Technology, Pedagogy and Content Knowledge (TPACK) (Koehler et al., 2013; Schmidt et al., 2009) and the Learning Sciences for multimedia learning (Mayer, 2008, 2009) is essential for the successful implementation and support of educational video technologies in higher education. TPACK emphasises the need to blend technological, pedagogical and content knowledge when integrating technology into teaching and learning. Additionally, the Learning Sciences offer a structure to help guide the design and employment of multimedia learning materials. By taking these frameworks into consideration in the context of educational multimedia technologies, we can gain a better comprehension of how teachers can create and put into action effective multimedia materials to elevate learning outcomes in higher education.

In addition, contemporary social approaches to professional development have been gaining traction in recent years(Garone et al., 2022; Littlejohn et al., 2019). These approaches focus on creating a collaborative, supportive environment for learning and knowledge-sharing. Given the complexity of roles and structures in higher education institutions, these approaches may be especially relevant for the successful implementation and support of educational video technologies.

This thesis seeks to explore the social professional development mechanisms used in higher education institutions for the implementation and support of educational multimedia technologies. By investigating the context of educational technologies, multimedia learning and teaching in higher education, as well as the complexity of roles and structures within these institutions, a more in-depth understanding of how these technologies can be effectively implemented and supported on an institution-wide level can be gained.

1.2 Research Problem

There is a growing body of literature on the effective use of educational video for teaching and learning (Brame, 2016; Ellis & Childs, 1999; Yousef et al., 2014), as well as how technological innovations are adopted (Rogers, 2003; Scherer et al., 2019) and the importance

of social relationships for professional development (Whitchurch & Gordon, 2017) in universities and colleges. Despite this, there is a gap in the literature regarding how educational multimedia technologies are implemented and supported effectively in higher education institutions, as this interjects and transcends these three domains. Saroyan and Trigwell (2015) identified this gap in the existing literature in their comprehensive analysis of research on educational development. There is a wealth of research focusing on the teacher-student level but a significant gap in meso-level inquiry, specifically concerning the relationships between professional learning, institutional culture and institutional and departmental practise. Additionally, relatively few is known about organisational implications of changes in academic development (Stensaker, 2018). Diffusion research in education has been growing, but more focus is needed on diffusion networks and communication channel usage, as is about the effect of social or communication structures on adoption of new technologies (Rogers, 2003).

This gap in the literature is concerning because it restricts our understanding of how to design and implement successful professional development strategies for the integration of educational multimedia technologies in HEI's. Without this comprehension, institutions could experience difficulty effectively executing and supporting these technologies, potentially resulting in negative impacts on student learning outcomes as well as a potential financial impact on the organisation. Investing in educational multimedia technologies requires significant financial resources, including hardware, software and training and support. Without effective implementation and support, however, these investments may not deliver the desired results or even be wasted. This thesis therefore seeks to explore how social powers and professional development mechanisms can be used in HEI's for the implementation and support of educational multimedia technologies.

1.3 Aims, Objectives, Questions

The aim of this thesis is to explore the social professional development mechanisms used in Belgian HEI's for the effective implementation and support of educational multimedia technologies.

To achieve this aim, the research objectives are to explore the types of professional development that are most effective in HEI's. In addition, another important objective of this study is to investigate the processes for implementing educational multimedia technologies in HEI's. This involves an in-depth examination of the implementation strategies used by

Belgian HEI's, as well as an analysis of the factors that influence the adoption and use of these technologies.

In order to achieve these objectives, this study will address the following research question: What methods do higher education institutions (HEI's) use to implement and support educational multimedia technologies?

- How do HEI's use **professional development** to ensure successful implementation and support of educational multimedia technologies?
- How do social **structures** within HEI's influence the adoption and use of educational multimedia technologies?

HEI's are large and complex, so effectively integrating educational video technologies typically requires a top-down approach led by central offices such as educational developers and teaching and learning centres. These offices are essential to designing and implementing professional development programmes that will help faculty use these technologies. This study therefore focusses on the perspective of these individuals and offices.

1.4 Significance

This research seeks to contribute to the development of effective social professional learning mechanisms for the successful implementation and support of educational multimedia technologies in HEI's. By exploring the methods used by HEI's to implement and support these technologies, as well as the social structures that influence their adoption and use, this research aims to provide insights for improving the integration of educational multimedia technologies in higher education.

The findings of this research have the potential to make a meaningful difference in the way that educational multimedia technologies are continuously supported in higher education. Furthermore, new technologies are implemented at regular times due to new innovations in multimedia creation and delivery, as well as potential juristic boundaries such as laws of public procurement that limit contracts with technology providers in time.

This research aims to provide a better understanding of the challenges faced by HEI's, allowing them to take proactive steps to address these challenges and improve the effectiveness of their implementation and support mechanisms. Furthermore, it aims to provide insights into the social professional development mechanisms that are most effective in supporting the integration of educational multimedia technologies in higher education. Through understanding the methods used by successful institutions, other institutions can

adopt similar strategies to promote the integration of these technologies in their own contexts. Ultimately, this could improve the quality of education and student learning outcomes.

1.5 Structure Outline

The thesis follows a structured outline that includes an introduction, literature review, methodology, results and discussion. The introduction provides a background on educational multimedia technologies in HEI's, the significance of studying social professional development mechanisms for implementing educational multimedia technologies in HEI's and the purpose of the study. Chapter two reviews the literature, including an overview of educational multimedia technologies, factors influencing their successful implementation and support in HEI's and theoretical frameworks such as TPACK, social learning theory and diffusion of innovations theory. The methodology chapter describes the qualitative case study research design and data collection through interviews with stakeholders. Chapter four outlines the results, which include professional development methods used by HEI's for implementing and supporting multimedia video technologies, social structures influencing their adoption and use, and barriers for implementing innovative practices. The discussion summarises the study, outlines implications for future research and highlights implications for practice in HEI's.

2 Theoretical Overview

2.1 Overview of Educational Video and their Benefits in Higher Education

Educational videos are increasingly used as a tool to enhance learning outcomes in higher education. However, the effectiveness of educational videos depends on various factors, such as the design, delivery and evaluation of the videos(Yousef et al., 2014). This chapter provides a theoretical overview of the benefits and challenges of using educational videos and interactive multimedia in higher education. It reviews relevant learning theories and studies that support the use of educational multimedia for cognitive and affective learning outcomes.

Video and Educational Technology Platforms

Educational technology, according to Januszweski and Molenda (Januszewski & Molenda, 2013), can be defined as "the study and ethical practice of facilitating learning and improving performance by creating, using, and managing appropriate technological processes and resources". One niche area of technological processes and resources HEI's invest in as part of

their digital learning infrastructure, is educational technology platforms to facilitate video based learning (Cagliero et al., 2017; Noetel et al., 2021).

Video services and applications are being widely used at universities in an attempt to support student learning, challenge teaching methods and increase accessibility (Crook et al., 2012; Lawson et al., 2010; Shephard, 2003). Lecture capturing, which involves recording lectures or presentations to make them available to learners, is one of the main uses. These platforms have the potential to reduce the workload associated with recording and developing multimedia. Automation can be applied to the management, playback and delivery of synchronised audio, imagery, slides, etc. (Mukhopadhyay & Smith, 1999). For this, universities can use various solutions such as video management systems (VMS), hardware and/or software. Popular VMS include Panopto, Kaltura, Mediasite and Echo360 (Gartner Inc, n.d.). Additionally, there are speciality tools such as Camtasia and Screencast-O-Matic that enable screen recordings and video editing, as well as self-authoring tools like H5P and Articulate Storyline 360 that allow users to create interactive video content with quizzes, branching scenarios and more.

The Covid-19 pandemic has spurred a surge in popularity of virtual classrooms for synchronous online distance learning (Hodges et al., 2021). This research, however, aims to focus on a wider variety of mostly asynchronous video delivery methods in HEI's.

Effective use of Educational Video

The incorporation of videos into teaching has been demonstrated to have a positive impact on student learning (Brame, 2016; R. C. Clark & Mayer, 2016; Giannakos, 2013; Navarrete et al., 2023; Nikopoulou-Smyrni & Nikopoulos, 2010; Noetel et al., 2021; Yousef et al., 2014). In addition, the increasing availability of cost-effective video production and streaming technology has allowed higher education to increase its reliance on video content. It is, however, necessary to consider how video is used in an educational context in order to ensure its effectiveness (Fyfield et al., 2019; Sherer & Shea, 2011; Vieira et al., 2014).

For example: a recent study by Noetel et al. (Noetel et al., 2021) suggests that incorporating videos into teaching can significantly improve learning outcomes. The study found that, while using video as the sole teaching method had only a minor effect, combining video with other beneficial teaching methods had a much larger positive impact. This is in line with Miner and Stefaniak's (2018) findings of teaching and students' perceptions. Therefore, it is important to consider using videos as part of an integrated teaching strategy to maximise student learning.

Contemporary Teaching and Learning Approaches

The challenge of contemporary teaching is to provide learners with engaging and meaningful learning experiences that leverage the advantages of multimedia tools. Multimedia tools refer to any combination of text, audio, graphics, animation and video used for teaching and learning purposes (Mayer, 2009). Examples of contemporary teaching methods that incorporate multimedia tools include blended learning, flipped classroom and distance learning(Bonk & Graham, 2012; Illeris, 2009; Moore & Kearsley, 2011).

Blended learning integrates online and face-to-face activities to promote learner engagement, flexibility and personalisation (Graham et al., 2013). The blended approach offers students the opportunity to partially engage in learning activities which are not limited by space or time restrictions (Bonk & Graham, 2012). For instance, learners can watch video lectures or knowledge clips before or after class, participate in online discussions or quizzes or use interactive simulations or games to practice skills. Means et al. (2013) discovered no statistically significant difference between fully-online and face-to-face learning outcomes, however, there was a large positive impact thanks to blended compared to face-to-face learning. This further implies that the integration of multimedia into a blended learning approach is an effective strategy.

Flipped classroom also offers an alternative to traditional instruction by delivering content online before class and using class time for active learning activities (Bergmann & Sams, 2012). Examples of such activities include problem-solving exercises, case studies or peer instruction (Yoon et al., 2021). In this format, videos, amongst other types of learning materials, can be used for students to process before attending class.

Finally, distance learning delivers instruction remotely through various technologies such as web conferencing platforms or learning management systems (Moore & Kearsley, 2011). This approach allows learners to learn from anywhere and anytime, for example by joining live video sessions with instructors or peers, accessing recorded video lectures or podcasts on demand or using multimedia portfolios or blogs to showcase their work.

Multimedia tools can support contemporary teaching methods by providing multiple representations of information that appeal to different learning styles and cognitive processes (Mayer & Moreno, 2003). However, there are also some challenges to consider such as cognitive overload, technical issues or lack of social presence (Homer et al., 2008; Stemler, 1997). Therefore, it is important to apply good practices when producing and using video content for teacher education, such as aligning videos with learning objectives, using clear

narration and visuals, providing interactivity and feedback and fostering social interaction and reflection (R. C. Clark & Mayer, 2016; Fyfield et al., 2019; Mayer, 2008).

Developing and Delivering Effective Videos for Learning

Studies have demonstrated that effective educational videos can greatly enhance students' engagement and support their learning process (Brame, 2016; Yousef et al., 2014). This chapter focuses on the development of effective educational videos by discussing various insights from previous research. These insights can influence the selection of educational multimedia technologies as well as the way they are used in teaching practices.

The ideal duration of educational videos according to research, is under nine minutes, as viewers tend to lose focus after six minutes and become completely unfocused after nine minutes Risko et al. (2012). Segmenting videos into smaller parts not only improves procedural learning but also reduces cognitive load (Biard et al., 2018; Mayer & Pilegard, 2005). A recent study by Wang et al. discovered that segmentation increased content memorisation and implementation when students were prompted to summarise material during breaks (Wang et al., 2023). To maximise learning outcomes, educational videos should be subdivided and supplemented with generative tasks, such as summarising.

Providing students with control over playback features such as chapterisation and interactive video outlines helps them better retain information (Zhang et al., 2006). Hypervideos, which incorporate hotspots and links for additional information or pathfinding, also contribute to improved retention (Cattaneo, 2018). Studies have shown that allowing students to adjust the playback speed can boost engagement and information retention (Lang et al., 2020; Murphy, 2022; Nagahama & Morita, 2017).

The presence of a teacher in educational videos has mixed results. In accordance with the social cue hypothesis, verbal and non-verbal teacher presence may enhance motivation (2022). However, talking heads can be distracting (D. Clark, 2021; Mayer, 2009) and should be used sparingly (Ellis & Childs, 1999). Subtitles can also be distracting (Chan et al., 2019; van der Zee et al., 2017), so it is advisable to provide viewers with an option to toggle subtitles .

The idea of seductive details shows that bright colors and images can distract learners from the main content. This idea is supported by cognitive load theory (Harp & Mayer, 1998; Sweller, 2011). This theory identifies three components of cognitive load: intrinsic (processing the material), extraneous (processing distractions) and germane (meaningful processing). To minimise extraneous cognitive load, educational videos should be designed

with only relevant information. To reduce cognitive load further, various strategies can be employed, such as signposts, highlighting important information and using the spatial contiguity principle to present visual and auditory information in close proximity (Mayer, 2008; Mayer & Moreno, 2003). Other methods include redundancy, coherence, personalisation and segmenting (Fyfield et al., 2019; Moreno & Mayer, 2002).

Finally, video quality is essential for reducing extraneous processing and promoting focused learning (D. Clark, 2021). While sound quality has been considered more important in the past (Reeves & Nass, 1996), recent studies suggest that overall production quality has a positive impact on student retention over time (Wu et al., 2018). Investing in professional video production can benefit both teachers and students, although further research is needed to determine which specific features provide the most positive impact (Simmons, 2022).

Learning and Educational Video

Simply watching or listening to videos passively is not always effective for learning. To facilitate more efficient learning using video and other multimedia, students need meaningful mental processes that bridge their knowledge gap (Guo PJ and Kim J and Robin R, 2014). This chapter examines various strategies for encouraging generative learning through educational videos.

Encouraging students to engage in the correct mental processing while learning is essential for instructional video. This involves interpreting the material's meaning and understanding how it connects to their existing knowledge (Shank, 2023). Doing so helps students to comprehend the material more thoroughly and retain it better. Fiorella and Mayer (2019), for example studied the effects of learning strategies (such as explaining, drawing and rewatching) on student performance when learning from narrated video lessons with complex diagrams. Results showed that explaining was the most effective strategy, especially when combined with instructor-generated visuals. Drawing was not as effective and rewatching was the least effective. This is in line with the earlier mentioned study by Wang et al. [wangBenefitsPromptingStudents2023], which combines summarisation exercises with segmentation.

Spaced retrieval and interleaving practice are two approaches to boost generative learning. Spaced retrieval entails repeatedly presenting information over time with intervals between each repetition, allowing the learner to solidify the material in long-term memory (Carpenter & Agarwal, 2019). Interleaving practice involves alternating between various types of material during a study session, in contrast to a block presentation of learning

items(Brunmair & Richter, 2019; K. Taylor & Rohrer, 2010). Instead of studying only one topic for an entire session, interleaving practice would involve studying multiple topics or sub-segements in one session. A recent study revealed that when students studied with a video incorporating spaced retrieval and interleaving practice, their performance on a test of the material was significantly better than when a conventional lecture-based video was used (Lang et al., 2020).

2.2 Factors influencing the successful implementation and support of educational video technologies in HEI's

Professional Development

Definition and Importance of Professional Development in HEI's

Continuous professional development is critical for HEI's to ensure successful teaching (Nicholls, 2000; Porter et al., 2000). As Mathieu Weggeman (2021), Full Professor of Organisational Science and Innovation Management, puts it, "Good people want to do good work". To help elevate teachers' good work, HEI's should provide their staff with opportunities to continually build their competencies and skills across various media types (Epper & Bates, 2001). Through this, they can ensure successful implementation and support of educational multimedia technologies.

This chapter will investigate the transformation of professional development practices in HEI's and their importance in effectively deploying and sustaining educational technologies.

Changing Nature of Professional Development

The nature of HEI's has been changing, moving away from the traditional "ivory tower" concept towards a more open and networked learning approach (Nørgård et al., 2019; Price, 2013). This shift occurs alongside a transition towards a 'de-centered' education paradigm, characterised by immersive pedagogies, reimagined teaching-learning relationships and a focus on more than just content mastery (Wright et al., 2018). Factors such as informal learning, experiential co-curriculum and the participatory culture of the internet contribute to this new environment, fostering democratic, reciprocal relationships between instructors, learners and materials (2018).

In this evolving and complex landscape, there is an increased demand for teaching staff to stay up-to-date with the latest technological developments and teaching methods (P.

Goodyear, 2015). This, in turn, influences how educators are supported in their teaching roles and highlights the need for continuous professional development that adapts to the changing nature of higher education.

At the heart of professional development for digital learning lies a more recent view on the pedagogy and technology interplay. Technology and pedagogy are now inextricably linked in post-digital learning (Knox, 2019). An entangled pedagogy approach encourages collaboration, uncertainty, imperfection, openness and honesty while considering the specific context of each educational setting(Fawns, 2022). Nonetheless, traditional perspectives on technology and pedagogy, like technological and pedagogical determinism can disconnect technology from its environment and restrict its capacity for social transformation (Andrew Feenberg, 2009; Clarke Grey, 2022; Fawns, 2019).

In addition to these substantive changes, on a more organisational level the focus of educational and professional development shifts from individual to organisational development, through which what Gibbs (2013) defines as moving from 'change *strategies*' to 'change *tactics*'. This results in a more change management approach(Marshall, 2010; McGrath, 2020) to facilitating support for and introducing new learning technologies. One example of such approach to change that is used by educational developers, is appreciative inquiry, which focuses on positive experiences and involves a commitment shared by a variety of stakeholders (Jones & Masika, 2020) to improve what works rather to focus on negative work experiences (Tjepkema et al., 2016).

Gibbs (2013) describes another significant shift, stating the focus of educational development has moved from a psychological one to a sociological one, with teachers seen as a community of practice with values, learning milieu, local cultures and hybrid connections and networks (Gosling, 2009; Whitchurch & Gordon, 2010).

These findings reflect in the way professional development initiatives (PDI's) occur as formal and informal learning for teachers in HEI's. Knight et al. (2006) found that non-formal activities, which are more likely to occur in the ordinary course of work, result in six times more learning than formal activities. In fact, more than 75% of adults engage in informal learning activities. Additionally, event-based professional development can supplement situated social learning, thus making it more effective. Consequently, it is recommended to focus on continuous learning rather than one-off workshops or seminars to promote effectiveness in professional development.

Different Professional Development Methods used in HEI's

Professional development entails three themes, according to Gurney (2015): person-oriented (for wellbeing), skills-oriented (for teaching) and career-oriented (goal-setting) PDI's. In addition, a study by Wardak et al. (2023) suggests that academics perceive professional development across three dimensions: what it is, how to engage with it and why to engage with it. These dimensions are interrelated and should be considered together when designing professional development programs. Relevance is important for engagement in professional development and can be enhanced by considering 'praxis', a method for action-making in uncertain circumstances (Kemmis, 2012),as an integral part of its philosophical underpinning. These PDI's are often delivered through various means, such as extensive programs, blended courses, web seminars, networking initiatives, workshops (Austin & Sorcinelli, 2013) … Unfortunately, teacher development programs often remain 'knowledge transform workshops' and lack a 'learning by doing' approach (Sincock, 2022).

Regular trainings often fall short for the just-in-time support teachers often search. (Ko & Zhadko, 2022)'s research suggests complementing these professional development endeavours with faculty mentoring programmes can help bridge that gap. Furthermore, faculty-to-faculty mentoring initiatives such as peer, group and network mentoring strengthens inter-staff relationships and aids them in becoming more confident and self-aware teaching professionals (Zhadko & Susan Ko, 2023). Group and networking mentoring is mostly informal, grows organically and lacks a predefined structure. This is where it differs from educational coaching, which often entails a more formal and structured approach where content knowledge and experience are not always required (Toll, 2018). Mentoring programmes can be cost-effective and have the potential to reach more faculty than staff can and thus supporting a larger learning community.

Networked professional learning has been found to be an effective way for teachers to develop professionally, as it allows them to collaborate with each other and share ideas and resources (Evert & Stein, 2022; Vaessen et al., 2014). It also provides an opportunity for teachers to learn from each other's experiences and gain new perspectives on teaching practices (Evert & Stein, 2022). These networked methods result in PDI's modalities such as communities of practice (COP), professional learning communities (PLC) and collaborative design or design sprints.

As defined by Wenger (1998), communities of practice refer to a collective of individuals who share a common interest and interact regularly to enhance their knowledge and expertise in that particular domain. They are used extensively in HEI's, as they are not

defined by the social relationships among people involved, but rather by the process of developing and negotiating expertise in a specific domain, Wenger states in an interview (Farnsworth et al., 2016). The social relationships that result from this process are a secondary effect. The formation of these relationships involves a unique type of connection, which distinguishes communities of practice from other groups like teams.

Teachers participate in Professional Learning Communities (PLC's) to enhance their teaching skills, share knowledge and collaborate with peers (Stoll et al., 2006). PLC's provide a network of colleagues to learn from, acquire new strategies and ensure high-quality education for students (DuFour, 1998; DuFour et al., 2021; V. A. Goodyear et al., 2019). By regularly meeting to discuss good practices, teachers can benefit from each other's experience and expertise to improve student performance (Evert & Stein, 2022).

When engaging in collaborative design, it is important to ensure that participants feel competent and inspired to contribute. Changing the mindset of educators, institutions and student populations from one of passive conformity to active critical and creative problem solving is essential (Perrotta & Selwyn, 2022). Design sprints and design teams have found their entrance in the last few years through models such as the ABC Learning Design and Redesign sprints (Perović & Young, 2015; *Sprint to the Finish*, 2022). They enable a team of interdisciplinary faculty members to quickly come to a user tested prototype (Knapp et al., 2016) for their online or blended teaching practice (Prestridge & Main, 2018).

Social Roles and Structures

Definition and Importance of Social Structures in HEI's

Key figures in professional development for digital learning can be defined as 'third space professionals'. Whitchurch (2008) defines third space professionals as individuals who identify with both the professional and academic domains, leading to the creation of a third space that operates in parallel with formal institutional structures and processes. This third space fosters lateral interactions among teams and networks, giving rise to new forms of management and leadership as well as friction and uncertainty (Obexer, 2022).

Based on these new identities, it has become increasingly difficult to put labels on roles that are involved with teaching and learning, and the use of educational technologies and multimedia. A study by Mitchel et al. (2017) found job titles such as educational / academic developer, instructional designer and educational technologist. The term instructional design covers a wide range of skills, from pedagogical solutions and course design to integration of technologies in an educational context (Dempsey et al., 2007; Rubley, 2016). The

instructional designer, as well as similar roles, must work collaboratively with the instructor in order to create a course that meets the needs of the students (Chao et al., 2006).

These roles find themselves both in central offices and departments (Education Policy Office, Centre for Digital Learning or Faculty Development Centres) as in academic faculties, thus operating in a third space between academic and professional spheres (Obexer, 2022; Stoltenkamp et al., 2016). Educational development centers are common in HEI's, typically structured as semi-autonomous entities under the registrar's, human resources, library, learning and technical support services departments, or distributed across them Macfarlane & Hughes (2009). As such, these third space professionals play a crucial role in shaping professional development for digital learning, as they possess a unique blend of academic and practical knowledge that enables them to bridge the gap between theory and practice.

This hybridity of roles has implications on existing structures in higher education. Tensions and discrepancies may arise between central and decentral located developers, and to prevent these, new partnerships and models are appearing (Austin & Sorcinelli, 2013). These partnerships and models aim to promote collaboration and communication between different departments and stakeholders, while also ensuring that PDI's are aligned with the broader goals and priorities of the institution.

Partnerships form both horizontally and vertically in HEI's organisational structures. A less formal example is partnerships between teaching staff and multimedia units to improve the quality of educational videos and decrease the workload for teachers (Wu et al., 2018). More formal social structures are found decision-making structures and faculty support units who set policies and evaluatie technology effectiveness (A. W. (Tony). Bates & Sangra, 2011).

There is a growing demand for digital rich learning environments and pedagogically competent learning experiences. HEI's that invest in learning and instructional designers will be better able to offer high-quality, demanding programming that fits the needs of their students (Alexander et al., 2019).

How Social Structures Influence Technology Adoption

Technology is constantly changing the way institutions are organised and what work their staff members perform (Muscanell & Caron, 2022; Jackson, 2019). With technology becoming more involved in all layers of higher education, institutions must continuously adapt to these changes. This adoption of digital technologies and processes in HEI's) is dependent on the sociomaterial connections between institutional variables that interact

constantly with one another, according to Whitchurch (Whitchurch & Gordon, 2017). The author further states that relationships are essential for the successful implementation of policies, and their absence can have a detrimental effect on the institution. Relationships can be seen as the arteries of the organisation, connecting all areas of activity. Thus, even digital transformations, such as implementing new educational multimedia technologies, require both technology and people (Barzman et al., 2021). Social structures can thus positively impact these transformations. According to Prestridge et al. and Whitchurch and Gordon (2018; 2017), teachers are empowered by social networks, online media and a focus on individual interests and needs as well as the collective growth of their peers. Professional learning is therefore enhanced by social structures as they involve teacher voice, creation, collaboration, inquiry and reflection.

2.3 Theoretical frameworks

Technological Pedagogical Content Knowledge (TPACK)

Technology, pedagogy and content knowledge (TPACK) is a framework that describes the knowledge required by teachers for the successful integration of technology in teaching (Classroom, 2021). This framework implies that teachers must understand the interconnections between technology, pedagogy and content, and how to combine them to create effective learning experiences (Koehler et al., 2013; Schmidt et al., 2009). TPACK is especially beneficial to those in higher education, as it supports the design and delivery of online courses that align with discipline-specific goals and pedagogical approaches. Nevertheless, developing TPACK requires continuous professional development which supports teachers in exploring the capabilities of various technological tools, reflecting on their own teaching practices and beliefs and working with other teachers and experts (Garone et al., 2022).

Social Learning Theory

Social Learning Theory sprouts from a behaviouristic view on learning, yet suggests that learning is a social process and that knowledge is acquired through interaction with others (Kytle, 1978). In short, the theory is based on observational learning and modelling (Bahn, 2001) . Valerie Farnsworth, Irene Kleanthous and Etienne Wenger-Trayner discussed this concept in their 2016 article, “Communities of Practice as a Social Theory of Learning” (Farnsworth et al., 2016) published in the British Journal of Educational Studies. They argued that by understanding learning as a social process, we can better understand how power,

identity and education are intertwined with it. The authors explored how ‘communities of practice’, social groups in which members learn from each other through shared experiences, can be used to broaden our understanding of learning. Other methods that align with PDI’s rooted in the social learning theory are COP’s and similar socio-constructivist approaching to sharing good practices amongst teaching faculty (R. Mitchell, 2013).

Diffusion of Innovations Theory

Faculty members will only make the effort to make adjustments when they can clearly understand the benefits of change or the costs of not changing (T. Bates, 2000). Every strategy for introducing technology into the classroom needs to take into account the current culture of the institution, and most crucially, the faculty members themselves.

Adoption at scale for educational technologies remains difficult due to the complexity of the implementation (Herckis, 2018). Some models in the literature attempt to explain what elements influence the effectiveness of technology deployments, such as the Technology Acceptance Model (TAM) (Scherer et al., 2019) and the Digital Transformation and Academic Entrepreneurship framework (DT-AC) (Garcez et al., 2022). These models, however, lack a more holistic approach to guide educational technology implementations across HEI’s. Similarly, frameworks such as SAMR and PICRAT focus on effective integrations of technologies in teaching practices of individual lecturers (Hamilton et al., 2016; Kimmons et al., 2020).

On a more systematic level, the Diffusion of Innovations Theory provides a useful framework for understanding how new ideas or products spread throughout a population or social system. It outlines four components (an innovation, communication channels, time and a social system) and five steps in the innovation-decision process (knowledge, persuation, decision, implementation and confirmation) (Rogers, 2003). By considering how these components and steps are interrelated, it is possible to gain insight into how quickly an innovation will be adopted, how long it will take for it to reach saturation in a given social system, and how norms and values shape adoption decisions and diffusion patterns (Sahin, 2006). Additionally, the theory can provide a deeper understanding of how individuals, groups and organisations interact with new ideas and products such as educational technologies and multimedia teaching approaches.

A study by Gogus (2021), for example, concludes that there are six key components of teacher professional development based on an examination of Evans’s work. These components, which are important contributions to the framework of professional development

for online and blended education, include: addressing the **changes** teachers must make during the transition to online and blended learning; determining the **goals and relevance** of teacher professional development for online and blended learning; acknowledging teacher professional development **strategies** related to the transition to online and blended learning; **disseminating knowledge, skills and attitudes** about online and blended learning; **evaluating** teacher professional development; and **strengthening confidence and competency** in using technology.

Lyytinen and Damsgaard (2001) argue that the Diffusion of Innovation Theory ignores technology's complex, networked and learning-intensive nature, as well as institutional regimes and crucial players in the innovation decision process. To comprehend innovation spread, they recommend multi-layered theories, numerous perspectives and different time scales. This critique emphasises the importance of considering the complexity of networks, institutional structures and stakeholders when evaluating social professional development mechanisms for implementing and supporting educational multimedia technologies in HEI's.

Applying the Diffusion of Innovations Theory further on this thesis' topic, several areas with multiple factors can be defined that condition the implementation of digital tools and processes in higher education institutions according to (Esteve-Mon et al., 2022): infrastructure, policy, training topics, training strategies, stimulus strategies and communication.

3 Method

3.1 Sample

This study makes use of a specific sample group consisting of educational developers, instructional designers and educational technologists from four distinct higher education institutions located in Flemish speaking regions of Belgium (East-Flanders, West-Flanders and Brussels). This approach ensures a diverse representation of professionals within the field, allowing for a more comprehensive understanding of the complex research topic. To guarantee that participants have the necessary expertise and understanding in deploying instructional multimedia technology and assisting instructors, a purposeful sampling strategy was used, making use of an extended professional network. The study intends to gather deep and thorough insights regarding the use of multimedia technology in higher education settings by choosing participants who are directly involved in the process.

A total of five respondents, one from each institution and, in one case, a duo, were questioned to obtain a variety of viewpoints and experiences regarding the higher education landscape in Flemish speaking Belgium. The demographic data of the participants, including their professional background, position in the organisational hierarchy, role identity and institutional affiliation, will be presented to provide context for their responses and contribute to a comprehensive understanding of the study's findings.

A closer investigation of individual experiences and the challenges of deploying educational multimedia technology in higher education institutions is made possible by the decision to keep the sample size to just five participants. A smaller sample size allows the study to concentrate on the subtleties and contextual variables that affect video technology integration's performance in highly complex teaching and learning environments, while also identifying good practices and offering suggestions for the field's future advancements.

3.2 Data Collection

The data collection for this study comprised of two primary methods: a literature review and semi-structured qualitative interviews. The identification of pre-existing ideas, frameworks and empirical findings that influenced the creation of the interview guide was made possible by the literature research. The research on faculty and instructional designers' collaboration by Richardson et al. (2019), Gordon and Whitchurch's study on relationships in higher education (2010) and Rogers' theory of the diffusion of innovations (2003) were important sources. The literature laid the groundwork for comprehending the intricate systems entailed in professional development for faculty members in higher education in relation to instructional video technology, as well as implementing new technologies across HEI's.

Five individuals with roles similar to educational developers, instructional designers and educational technologists from four different higher education institutions in Flanders and Brussels participated in semi-structured qualitative interviews as the main technique of data gathering. Each of the four main sections of the interview guide (general information, educational technologies, organisational structure and implementing new multimedia educational technologies and ongoing support) explores a different aspect of the participants' experiences with educational video technologies. These sections are included in the appendices. A section on professional development activities was also added to go more deeply into the networks and learning opportunities available to teachers and supporting faculty.

Participants were given the opportunity to express their experiences and viewpoints in their own words because the interviews were done in a narrative approach. Although prone to recall bias (Vähäsantanen & Arvaja, 2022), this method produces rich and complex data regarding people's experiences and viewpoints. The interviews were audio recorded and transcriptions were made to ensure the obtained data was reliable and accurate. Future research may take into account using real-time data gathering techniques, such as the Experience Sampling Method (Seifried & Rausch, 2022), to get around the shortcomings of retrospective accounts.

The processes used to collect the data were created to make sure the research findings were reliable and credible. The flexibility of the semi-structured interview method allowed the interviewer to follow up on interesting points and delve further into the participants' experiences. To make sure participants had the required experience with educational video technologies, the careful and specific sample strategy was used, as stated earlier. This way, valuable insights related to the research topic were gathered from those professionals who are skilled in using, implementing and assisting teachers with these video technologies.

3.3 Data Analysis

A thematic analysis was used to systematically identify, investigate and interpret patterns and themes arising from the interview transcripts during the data analysis process for this study. As a versatile and rigorous method, thematic analysis allows for the detailed organisation and description of data, as well as the detection of linkages between distinct themes and sub-themes (Braun & Clarke, 2006). This method is well-suited for analysing complex and nuanced narratives gathered during semi-structured interviews because it allows researchers to gain a thorough understanding of participants' experiences, perspectives and the contextual factors influencing their work with educational video technologies in HEI's.

The data analysis technique started with a thorough assessment of the interview transcripts, which was then followed by an initial coding phase. Here, relevant extracts were assigned descriptive labels. Following that, these preliminary codes were compiled and categorised into bigger themes based on their commonalities and relationships. The themes were constantly evaluated and developed to maintain rigour and reliability in the study, with constant comparison between the data and the theoretical frameworks. This eventually resulted in a mixed method approach of both deductive and inductive coding methods. Therefore, this iterative method enabled the discovery of crucial results and insights into the diffusion and support of instructional multimedia technologies in Belgian higher education

institutions, as well as the participants' professional learning experiences. The resulting theme structure provided a thorough overview of the complex systems involved in the adoption and use of educational video technologies and it guided the study's discussion.

3.4 Generative AI in the Context of Writing

This thesis acknowledges the use of generative AI and large language models (LLMs) to assist in the writing process. Generative AI was employed in two main categories. Firstly, during the final stages of writing, a combination of the OpenAI API and LangChain frameworks were utilised to enhance the writer's retrieval process. This implies that generative AI was not used to extract content from the LLM's obscure training resources. Instead, it was employed more specifically to recall notes the writer had taken on all literature reviewed and examined. The natural language search capabilities of these technologies made this a more efficient method for searching through the data collected and generated during the initial literature study. Prompts included phrases such as "What did I write on…" and "what are aspects of…". This led to a compilation of notes for each paper the model could find a relevant response. Secondly, OpenAI's API was employed to refine sentences and prevent monotonous language usage. Prompts included "Rewrite this to better link sentences" and "help me find a better way to structure this paragraph". The resulting suggestions were then analysed and adjusted according to the writer's preference. Generative AI tools such as ChatGPT were not used in any other capacity within this thesis.

4 Results

The results section of this thesis aims to examine the key themes arising from the research on integrating and supporting educational multimedia technologies in HEI's. This chapter focuses on the roles and strategies of Centres of Teaching and Learning (CTL) officers, their professional development and trends in their field. By understanding these themes, we can gain a deeper insight into the successful implementation and application of such technologies in higher education.

4.1 Roles and Identity in Educational Support

In addressing the research question on how HEI's use professional development to ensure successful implementation and support of educational video technologies, it is essential to examine the roles of those who facilitate and manage these processes.

Multiple titles, similar roles

The participants in this study encompass a diverse range of roles within the educational support domain, reflecting the evolving landscape of HEI's and the increasing importance of technology and multimedia in teaching and learning. These roles, which include **education support officer** (onderwijsondersteuner), **staff member education policy and digital learning**, **blended learning project officer** (projectmedewerker blended learning), **educational developer**, **domain coordinator** and **educational technologist**, are crucial in assisting their institution, their teachers and students in implementing and supporting educational multimedia technologies.

Participants' role descriptions primarily focus on 'digital learning,' 'educational technology' and 'education innovation.' They engage in various tasks including implementing hybrid classrooms, developing modern learning spaces, supporting blended learning and implementing new educational technologies across their institutions. All participants take on some form of coordinator responsibilities, such as establishing timelines and overseeing technical integrations. They also engage in teacher professional development and share practices among support staff. A participant aptly captures this by stating their role exists "somewhere on the border between policy and support," while maintaining a connection with teachers and their practice. For the purpose of clarity in this study, the various roles and titles held by these professionals are referred to as "officers of Centres for Teaching and Learning" or "CTL officers," as these offices embody the core responsibilities associated with these roles in higher education.

The participating CTL officers facilitate a shift towards more integrated views on teaching by engaging in interdisciplinary workshops, conferences and collaborative projects to foster innovation in teaching methods and blended curricula within HEI's. One participant highlights the networked aspect by saying, "we strive to explore diverse aspects rather than staying on our island, making the job interesting." One participating CTL officer even mentions a literal, physical and online Learning Hub to share knowledge and policies related to educational and technology practices, similar to the remaining institutions.

In the following chapter, the discussion delves deeper into the challenges and strategies associated with navigating organisational structures and the ways in which CTL officers contribute to the diffusion of educational video technologies within their institutions. This provides a better understanding of the interplay between individual roles, institutional structures and the adoption and use of these technologies in higher education.

4.2 Navigating Organisational Structures

Central Offices

HEI's house various organisational structures within their CTL offices to support the implementation and use of educational video technologies, as well as to improve teaching practices in general (Drysdale, 2018; Epper & Bates, 2001; Wright et al., 2018). There are various variations in office and subteam names in participants' institutions, such as "Education Policy Office," "Office of Education Policy and Quality Assurance," "team Education Support," "team Educational Innovation" and "team/domain Educational Technology". This interconnected nature is further illustrated by participants' evident collaboration between IT offices and pedagogical-focused developers, for instance. It is noteworthy that one participant's CTL incorporates a multimedia team within the educational technology team, which highlights the significance of multimedia in education, as these professionals are often situated in separate offices such as IT and Infrastructure. An interesting observation is the disparity in technical ownership of multimedia-related platforms among participants and their colleagues. Most CTL officers hold the highest administrative role in their LMS, student response systems, authoring tools and lecture capturing system, except at one institution. In this case, these professionals rely more on strong connections with the IT department, who possess these rights, resulting in a potentially more rigid and challenging implementation process.

Across three HEI's, evidently those who have well-defined sub-teams, Education Quality Assurance is integrated in the CTL, whereas at one institution, this is another office entirely. These interviews did not conclude how these sub-teams and offices might work together in light of implementing educational multimedia technologies.

Centre 1	Centre 2	Centre 3
Team Education Support	**Team Educational Innovation**	**Team (or Domain) Educational Technology**
Team Education Quality Assurance	Team Education Quality Assurance	Team Education Quality Assurance
	Team Professionalisation	Team Internationalisation
	Team Faculty Educational Support (Officers)	Team Study and Trajectory Support/Guidance
		Team Educational Development

Table 1: CTL team compositions

The implementation and support of educational video technologies in HEI's necessitate the participating CTL officers to collaborate with various stakeholders, such as IT departments, purchasing offices, student support services, diversity offices, teacher training programmes, multimedia or audiovisual offices, legal services, edtech provider companies and local support officers. The extensive collaboration network underscores the importance of blending technical and didactic expertise with robust communication and interpersonal skills for CTL officers. Collaboration sprouted from participating CTL's takes form in various ways, such as organising faculty education days, coordinating information sessions, training courses, workshops and engaging other staff members in specific projects at different stages. Additionally, working closely with study and program counsellors in pilot phases helps refine and expand initiatives. Some of the many examples given by participants, include collaborating with purchase departments during tender procedures, exploring automatic captioning services with special needs facilities, optimising LTI (Learning Tools Interoperability) connections with IT staff and collaborating with local support staff on PDI's. By spearheading partnerships across these multifaceted layers, these CTL officers play an indispensable role in ensuring smooth integration and continued support of educational video technologies within their institutions.

De-centralised Support

Participating HEI's have quite distinct organisational structures when it comes to supporting digital and blended learning methodologies. A main factor addressed is the provisioning of local support officers: educational developers and educational technologists who operate at faculty or programme cluster level. One institution particularly decided to continue investing

in these local support profiles. Other HEIs, on the other hand, are on the verge of organisational restructuring, with no clear indicators for the future of these roles as of this writing.

At the time of this study, all participating HEI's were provided with local support at the faculty or programme cluster level. Interestingly, one institution started these roles during the pandemic. Additionally, a distinguishable feature in one institution involves an extra hierarchical level above local support, responsible for coordinating educational development and digital learning across a cluster of programs. These locally positioned roles are clearly linked to educational and multimedia technologies in roughly half of the participants' HEI's, resemblant in titles such as 'digital learning officer' and 'educational technologist'. This further resembles the ambiguity of roles, swinging from educational development to educational technology foci. However, the immediate connection between CTL's and local support officers is best visible at one participating institution. Here, the CTL officer unravels a mix where local support roles work part-time at the CTL and part-time at their faculty. As this study revealed, individual institutions display varying approaches towards allocating Full-Time Equivalent (FTE) positions for supporting innovations. Two institutions have a fixed percentage FTE per faculty or program cluster, whereas the local support in other institutions can vary depending on the faculty or cluster of programs (e.g. education, business, etc.). Interestingly, full-time support is rare, and the implications of this disparity for the amount of support provided per specific number of teachers and students remains unclear.

The roles of local support officers in this study were not always clearly defined, as became apparent from the participants. 'Educational technologists' and 'digital learning officers' seem to focus more on educational and multimedia technology usage, while 'educational developers' practice a broader scope, emphasising pedagogy and teaching strategies. Local support officers mainly provide ad-hoc one-on-one assistance to teaching staff in rethinking their teaching practices, as well as offer PDI's for teacher groups in their faculty or programme or at department level. The latter can be a joint effort with CTL officers. As one participant formulates: "One key task of these colleagues, is to translate the institutional vision on their departments' context, as well as support teachers and students in using new technologies." In this context, the primary focus of local support officers lies in developing online learning materials, such as instructional videos and interactive formative assessments. They also provide assistance in creating engaging assignments and facilitating synchronous teaching activities to enrich the overall learning experience. Participants greatly appreciate the support provided by these professionals due to their proximity to specific

teacher groups, meaningful relationships and their pedagogical and technical expertise. Furthermore, participants regularly meet with local support officers at various points throughout the year to harmonise their visions, frequently with other central staff members such as IT personnel. These meetings involve discussing strategies for transitioning technologies, sharing support practices, and collaborating on professional development initiatives (PDI's). Participants in these discussions highlight the interconnected manner in which information flows across all levels of institutional hierarchies.

4.3 Professional Development

Professional development initiatives (PDI's) appear to play a crucial role in the successful implementation of multimedia technologies in higher education. Most notably, participants share a whole range of initiatives that that caters to the different requirements of students by providing teaching professionals with the appropriate skills and knowledge. One example of a PDI all participating HEI's deploy, is dedicated teacher training tracks that address fundamental areas of teaching including educational technologies such as developing multimedia resources and designing blended learning modules utilising frameworks such as the ABC method (Perović & Young, 2015). These training courses follow a flexible trajectory, lasting a semester or an academic year and are held on campus, online or in a hybrid format.

The emerging trend of extended training formats with, for example, 'come-back-days' at one participating HEI, allows teachers to learn from CTL officers and peers, apply what they've learned in the classroom, and then reconvene to discuss their findings and reflect on successes and challenges. "It is about real and effective change that is put into practise; which can hopefully be better achieved over multiple days instead of single-moment PDIs," one CTL officer emphasises. This multi-day approach aims to promote significant, long-term improvements in teaching practise. Moreover, one institution seeks to examine the impact of these methods on teaching and learning, rather than solely relying on less valuable questionnaires for teachers' feedback about PDI's ("Improving Impact Studies of Teachers' Professional Development," 2009).

The effectiveness of mentioned PDI's heavily relies on active engagement, knowledge sharing and collaboration among teachers. 'Learning Cafés' and 'Tastes of Technologies' sessions provide networking and idea exchange opportunities for teachers during lunch breaks. 'Tastes of Technologies' is a professional development initiative used at one HEI that offers multiple sessions throughout the year, held during lunchtime, to introduce and

familiarise teachers with new educational tools. The aim is to inspire educators in utilising these technologies and guide them towards related professional development opportunities, ultimately enhancing their teaching methods and skills. ‘Learning Cafés’ are professional development events that take place at another HEI. These are a two-hour lunchtime session and revolve around a specific theme, such as activating students. Such events feature multiple stations with inspiring topics or digital tools, support personnel, a dedicated networking corner for connecting with fellow educators and references online access to shared materials for all participants (‘Learning Hub’). Another approach used is a PDI that switches between whole group and smaller groups discussions for teachers to participate in. These types of PDI’s are of a more informal nature, resembling walk-in-sessions but with time to share experiences, which are found to reduce barriers to accessing instructional resources and provide immediate assistance.

In addition to informal initiatives, the implementation of design teams and a connected train-the-trainer strategy significantly contributes to the continuous development of teaching practices at one institution, ensuring educators have access to a diverse range of tools and expert guidance. These design teams are informed by a design sprint mentality and consist of interdisciplinary members, including educational developers, educational technologists, video creators and library staff. These teams use the ABC method for blended learning design or redesign of teachers’ courses, with clearly defined roles for each team member. Furthermore, knowledge sharing is facilitated through multiple cross-team and cluster events. Although obtaining funding for these teams can be challenging, financial support is occasionally provided by sources such as ‘Voorsprongfonds’ provided by the Flemish government and the European Union. Nevertheless, this type of professional development initiative is found not to occur as frequently, due to the high cost in staff resources.

It is essential to mention that the aforementioned PDI’s are supplemented by training sessions focusing on specific educational or multimedia technologies, such as Panopto, Kaltura, Wooclap, Edpuzzle and others. A step-by-step approach, particularly when introducing new platforms, is vital, as one CTL officer explains. The participant further clarifies this idea with a concise analogy:

> “Learning to use a tool is like learning to drive a car; mastering basic handling comes first, and then the real experience begins as one learns defensive driving and risk assessment. Teachers often benefit more from learning from one another rather than just listening to an expert in a training room.”

This viewpoint emphasises the importance of peer-to-peer learning and practical experiences found by all participants when adopting new tools in teaching.

A major component of PDI's this study uncovers is 'trialability', which allows educators to experiment with new tools and adjust them to their specific teaching approaches. Activities such as video production, troubleshooting in technologically sophisticated classrooms and guided coaching sessions promote this in a hands-on approach to learning. "When we give a training about our lecture capturing system, it is important that teachers try the platform […] they will have forgotten how to use it when they want to use it for real," one participant said. Another participant's example illustrates this in the adoption of new technologies within hybrid classrooms: "If you would look at the design of one of our sessions about hybrid classrooms, it involves an interactive aspect where we encourage colleagues and teachers to immerse themselves in the MS Teams room setting and use the available infrastructure. (…) Pretty much learning by doing." This approach not only is found to help teachers become familiar with the hardware and software but also to foster a more profound understanding of the potential benefits and challenges associated with implementing these technologies in their teaching practice. Participating CTL officers apply this trialability mentality on their own practices by planning experiments with different approaches to training and support offerings to make them more effective, and they are trying different techniques in a pilot phase before expanding them to get more teachers involved.

In addition, mentioned PDI's prioritise meeting teachers where they are emotionally and professionally, as well as creating an environment in which they may openly share their experiences and concerns. Offering just-in-time assistance, bringing the learning experience closer to the faculties and fostering peer conversation are all important components that are found to improve the overall experience. As stated by one participant, "teachers learn much more from one another than from someone who preaches information in a single direction." Another reason participants favour connecting with teachers at their faculty or programme, is because "people who attend these sessions already know each other, which lowers the barrier to fully participate during the session". In addition, this is found to "improve relationships between colleagues, which makes for better knowledge sharing". PDI's aim to ensure that the integration of multimedia technologies and services is a successful and sustainable process, generating significant change in higher education, by using these multifaceted methods.

As for participants' own professional learning, CTL officers rely upon different resources and strategies to enhance their knowledge and skills in educational and multimedia technologies. These include through personal networks, colleagues, edtech

provider updates, online searches and social media platforms, for example Twitter, LinkedIn and YouTube. Attending conferences and networking with colleagues from other HEI's are crucial for their professional development. Existing institutional resources often fail to meet their learning needs, possibly due to the unique contexts of CTL officers, which highlights the value of learning from similar professionals. Nevertheless, some participants mention a lack of time to invest in their professional learning during work hours, potentially limiting their exposure to valuable insights and good practises. To address this issue, they participate in cross-institutional communities and networks such as the Flemish Canvas User and Admin Group, ABC Community and Special Interest Groups (SIG) focused on topics such as blended learning and educational development. This collaborative approach enables CTL officers to broaden their knowledge and stay up-to-date on the latest trends and innovations in both educational multimedia technologies and ways to inspire teachers.

4.4 Driving Forces and Coping Mechanisms for Change in Higher Education

Apart from the mentioned impact of the Covid-19 pandemic, the interviews uncover that a growing and diverse student population, coupled with technological advancements, has led to increased interest in innovative teaching and learning approaches infused with multimedia at the participating HEI's. At the time of this study, all Dutch-speaking HEI's had received government funding ("Voorsprongfonds") to continue investing in cutting-edge, technology-driven teaching methods and curriculum development. The interview findings reveal a striking connection between this financial support and the current responsibilities of participating CTL officers, who spearhead various initiatives related to technology in education. Noteworthy examples include equipping hybrid and collaborative classrooms, promoting blended learning practices, enhancing learning spaces and optimising educational technology offerings such as self-authoring tools like H5P and comprehensive video platforms like Panopto.

The interviews reveal a striking contrast in the stages of innovation implementation, with most institutions implementing minor adjustments while only one is making a significant change by adopting a new lecture capturing system, Panopto, for all teachers. Furthermore, as this study explores beyond its scope, it becomes apparent that seamless integration of hybrid classroom facilities is in the early stages for these HEI's. To ensure the success of new technologies, it is found crucial for all stakeholders, including decision-makers and support officers, to be on the same page. According to the participants, emphasising sustainable

innovation instead of rapid, sequential implementation will facilitate a more efficient and effective innovation process.

The interviews also highlighted the importance of dealing with resistance from some teachers who prefer traditional teaching methods. One participant states that after Covid-19, some teachers return to their old teaching methods, ignoring the potential benefits. Educational technologists, according to one CTL officer, must be patient and diligent in addressing these concerns and demonstrating the potential benefits of incorporating new technologies into their teaching practises. Even the most resistant teachers may eventually recognise the benefits of incorporating educational multimedia into their curriculum with ongoing assistance and direction. Despite these efforts, participants struggle to engage and involve these more reluctant teachers in their support offerings.

Teachers' willingness to participate in the PDI's and implement educational multimedia technologies is thought to be heavily influenced by factors such as time commitment and the potential benefits of adopting new technologies. As the participants noted, time is both an immediate and long-term asset and a possible obstacle. The CTL officers are responsible for managing and supporting a wide range of educational technologies that serve the needs of both educators and students. Ensuring the value and effectiveness of such technologies while overcoming challenges such as time constraints and a lack of motivation necessitates their incorporation into the overarching framework of the institution's educational vision. A participant expresses this viewpoint plainly: "technology is a cog in the wheel, an important cog, but not as important as students' learning." This demonstrates the significance of a well-structured educational strategy in promoting the successful implementation of innovative technologies in the teaching process.

In general, the process of promoting innovation in relation to the implementation of educational multimedia and video technologies does not follow a set path. However, numerous tactics are used to efficiently control this process. Some of these techniques mentioned include exposing decision-makers to new capabilities demos, organising train-the-trainer workshops for local support personnel and collaborating with early adopters to get valuable feedback. Additionally, incorporating support resources, such as IT and helpdesk staff, in the implementation process to assure a common goal and language, can assist to more efficient innovation management inside HEI's.

The exchange further highlights the importance of maintaining a versatile yet complete collection of instructional tools and platforms, which is an ongoing process of change. CTL officers recommend implementing a system in which teachers can submit

requests for new platforms, which can then be discussed and evaluated together with educational technologists, IT departments and other stakeholders. One such platform is a Change Advisory Board (CAB) (ServiceNow, Inc., 2021), which consists of a group of key stakeholders responsible for assessing and evaluating changes. Used by two participating HEI's, this strategy can aid in maintaining the relevance and effectiveness of the technology collection, consequently improving learning experiences.

In summary, and as a prevailing perspective among the participants, patience is essential in the ongoing implementation and support process. Organic growth and ripple effects may require time to successfully integrate and support educational multimedia technologies in HE's.

4.5 Communication Channels

Communication channels are essential to the implementation process., as underscored by one of the CTL officers, who stated, "Communication is a crucial aspect. It helps with a more progressive transition into a platform-change, and to provide them with enough time to make the process of acceptance easier." The participant elaborates on the significance of communication in the adoption process by emphasising that "communication is actually about putting people at ease. What is heading our way? What does this change mean for me as a teacher? Will I lose existing materials or gain new ones? What new opportunities are in it for me?" Addressing these concerns through effective communication channels allows educators to better understand the context of the innovations and their potential implications.

Mass communication channels used by the CTL officers include newsletters dedicated to professional development initiatives and, in some cases, a specific newsletter focused on providing hands-on tips and tricks for using educational technologies. Platform announcements are also used, as is a trickle-down method involving local coordinators, supporting staff, and developers. Educators can also benefit from online documentation pages that contain instructions, tutorials, and how-to videos. However, CTL officers continue to face challenges in reaching teachers who may benefit most from professional development or course optimisation. In addressing this issue, they recognise the importance of using multiple communication channels to ensure the message reaches the intended audience.

Individual communication strategies, in addition to mass communication, play a major part in assisting teachers. Access to educational technologists and helpdesks contribute to a supportive environment for educators during the adoption process. All participating HEI's have similar support mechanisms in place, although they are found to be less known to some

teachers. One institution has an educational technologist available on-demand each day for instructors to consult, which can allow for quick guidance and answers. This strategy has been found extremely successful, since teachers like the on-demand support and expert guidance tailored to their individual teaching circumstances.

5 Discussions

5.1 Research question: how do social structures within HEI's influence the adoption and use of educational multimedia technologies?

This research study delved into the strategies employed by HEI's for the implementation and support of educational multimedia technologies. Various themes emerged from this investigation, highlighting methods such as offering professional development opportunities, establishing dedicated support roles and harnessing online resources and communities of practice. Furthermore, it was evident that a successful adoption of educational multimedia technologies often necessitates a collaborative effort from multiple stakeholders, including faculty, educational technologists, IT staff, and administrators. In essence, the discussion of this study underscores the significance and an exploration of a multifaceted approach in ensuring the successful integration and support of these technologies within HEI's.

An interesting insight this study uncovers, is that Belgian HEI's are in a constant state of flux. They adapt to internal and external stimuli, such as organisational restructuring, growing needs for hybrid modalities, external funding initiatives, changing student demographics and expanding demands for meeting educational standards (Felten & Linder, 2017). One such related emerging trend, is that Belgian HEI's, similar to most large education institutions, transition from self-hosted technologies to Software As A Service (SAAS) providers (Sankey, 2023), making for complex migration of teaching materials and higher support needs. In this challenging context, CTL officers aim to scale the adoption of educational multimedia technologies through complex implementation processes (Herckis, 2018). This study confirms that the organisational environment therefore plays a crucial role in the potential capacity to absorb innovation (Buc & Divjak, 2016).

Innovation in higher education should be guided by educational objectives, such as increased access and equity, with a focus on strategic goals that propel institutions forward (T. Bates, 2022). Within this context, this study identifies CTL officers as change agents who effectively navigate the intersection of policy, management and teaching practice. Based on

this study, it is clear that the CTL offices that house these individuals, share a common goal of facilitating dynamic change processes and seek continuous improvement in their practices, as can be found in related literature (Stensaker, 2018). This in spite of their different team structures and office titles.

Many titles are found for the CTL officers as well (K. Mitchell et al., 2017), which is in line with research about the hybridity and fluidity of these professional identities and the third space they walk between academics and management (Whitchurch, 2008). Interestingly, unlike in English-speaking countries, the title of 'instructional designer' was absent in the formal professions within these HEI's, despite their similar daily tasks (Intentional Futures, 2016; Richardson et al., 2019). While the integrated focus on technology of these individuals aligns with the post-digital notion in spirit and intention (Fawns, 2022), these aspects are not always be explicitly reflected in these professionals' titles or team composition. It is clear, however, that in navigating the third space of their HEI's and engaging in diverse aspects of educational support, CTL officers confront the challenges arising from their organisational hierarchy.

Adopting a holistic approach to academic development, CTL offices address the diverse needs of teaching and administration while engaging with a broad spectrum of stakeholders across organisational structures in modern universities (Gosling, 2009; Mårtensson & Roxå, 2021). As a "hub" for interdisciplinary learning and resources, they promote effective use of educational technologies, such as videos, to support a more participatory and integrated educational experience (Wright et al., 2018). This enables CTL officers to effectively navigate intricate relationships and bridge organisational divides (Little & Green, 2022; Taleo & Vallis, 2023).

In their efforts to drive innovation, CTL officers heavily rely on decentralised or local support roles, which encompass both change agents and opinion leaders within the institution. Opinion leadership here refers to the ability of the local support officer to informally influence others' attitudes or behaviour in a desired direction with relative frequency. This they accomplish by taking up the role of expert in digital learning and making use of their extensive networks, which is similar to CTL officers, whilst also remaining in close proximity to teachers due to their immediate supporting characteristics. Individuals in such positions serve as influential peers who can shape the perspectives and actions of their colleagues. On the other hand, change agents are individuals who impact teachers' innovation-decisions, guiding them in a direction deemed favourable by a change agency (often CTL's)(Dirk et al., 2020; Rogers, 2003). These agents often work for the change agencies, bridging the

heterophily gap between professional change agents and their teachers. By interweaving the roles of change agents and opinion leaders, CTL officers can foster a supportive environment that facilitates the successful implementation of innovative educational technologies (Gogus, 2021). In doing so, they encourage collaborative efforts and synergised decision-making processes, ultimately contributing to the advancement of the institution's overarching educational goals. The emphasis placed on networked learning and social networking further aligns with the findings of De Laat and Whitchurch (Laat, 2012; Whitchurch & Gordon, 2017), who argue that these practices can enhance professional growth by facilitating the creation and maintenance of meaningful social relationships and providing access to shared resources, help and collaborations. Studies further indicate that interconnected support systems can facilitate educational transformation and improve communities of professional development (Evert & Stein, 2022; P. Goodyear & Carvalho, 2014; Hayward & Laursen, 2018; K. L. Taylor et al., 2022).

Similar to Perrotta and Selwyn's findings (2022), prior to the Covid-19 pandemic, institutions that had a defined, long-term strategy for employing technology and multimedia, good procurement processes and well-supported positions anchored in the organisational hierarchy seem to benefited from these solid foundations during and after more challenging times. Based on the in-depth interviews of this study, these qualities appear to be less negatively influenced by variables such as budget cuts as organisations change. The fact that most of the participating HEI's have no certainty about the local support roles' longevity further underlines the impact of leadership as Bates' (2022) views suggest. Effective leadership can encourage innovation by establishing a clear vision and strategy for teaching and learning that encompasses, amongst other factors, a diffused leadership, where individuals at different levels share responsibility for innovation.

CTL officers must navigate organisational divides by involving and communicating with a wide variety of stakeholders during different phases of the implementation process. Not only do they cross the vertical hierarchies of HEI's, by close collaboration with central support staff in faculties and programme clusters, they also work with different offices on a more horizontal manner. Important stakeholders defined in this study, specifically related to educational multimedia technologies, include: local support officers, teachers, students, leadership, juristic advisors, educational developers, IT offices, Infrastructure Offices, programmes specific to teaching (e.g. Bachelor in Education: Secondary Education) and obviously multimedia teams. Multimedia adds an additional complexity, as this is found to involve both software and hardware. In addition, the hybrid and blurred nature of CTL

officers can provide friction during collaborating with others (Obexer, 2022), especially if their mandate is ill-defined.

To conclude this research question, one of the participating CTLs' metaphor aptly captures the essence and contribution of CTL officers. They can be compared to ship navigators, bridging the gaps between islands that would otherwise be more isolated from one another. These islands represent various stakeholders and various aspects of the higher education ecosystem that are critical in the implementation and support of educational multimedia technologies. CTL officers navigate this complex landscape by effectively weaving networks of collaboration, communication and knowledge sharing among stakeholders. They enable the successful integration of innovative educational multimedia technologies and contribute to the pursuit of the institution's strategic educational goals by fostering strong connections and synergies.

As the higher education landscape evolves in response to new challenges and opportunities, institutions must recognise, support and leverage the unique capabilities of CTL officers more than ever (Joint Research Centre (European Commission) et al., 2019). Their knowledge, dedication and adaptability in navigating organisational divides and complexities enable them to shape the future of higher education, allowing them to drive innovation and ultimately have the potential to improve teaching and learning experiences for all.

5.2 Research Question: How do HEI's use professional development to ensure successful implementation and support of educational multimedia technologies?

This research confirms a growing use of more innovative methods of professional development, such as active learning, collaboration, coaching and open online resources (Joint Research Centre (European Commission) et al., 2019). Despite studies highlighting the prevalence of regular 'sit-and-listen' sessions as the norm due to their cost-effectiveness and easier management (Joint Research Centre (European Commission) et al., 2019; Sincock, 2022), this research provides evidence that socially constructivist methods are being employed and preferred by CTL officers in facilitating professional learning. These officers emphasise the importance of social interaction and practical experiences in the learning process, thus aligning with the principles of social constructivism. This approach suggests that learning occurs through active participation in social activities and applying knowledge within real-world situations (Borko, 2004; Laat, 2012). As such, the findings of this study challenge the notion that cost-effective, passive learning methods dominate the professional

development landscape and demonstrate the value of more engaging, socially constructivist approaches in promoting professional learning.

Different categories of professional development are identified. Although communities of practice (COP's) were not explicitly referenced by the participants in this study, their characteristics can be observed in the collaborative processes and interactions among CTL officers, IT, and multimedia offices, as well as local support officers. These collaborations manifest through online platforms like Microsoft Teams channels, as well as regular face-to-face meetings, thus resembling a networked professional learning approach (Littlejohn et al., 2019). As suggested in the literature, effective communities of practice are groups that engage in knowledge sharing and collective expertise development within a specific area through ongoing interaction, thereby providing a social forum that supports the evolution of knowledge (Wenger, 1998). Furthermore, the sustained peer interaction these HEI's support, proves to support professional development effectiveness (Hayward & Laursen, 2018). These communities can therefore offer both short- and long-term value to educational institutions and the individuals involved, and have been identified as promising learning environments to stimulate and support the professional development of teachers (Prestridge & Main, 2018; van Lankveld & Volman, 2011). The collaborative inner-workings of these social systems also resemble professional learning communities, as individuals adopt new strategies to ensure the institutional goal of improving teaching and learning through technology and multimedia (DuFour et al., 2021). Transcending COP's, PLC's further came across more clearly in this study. These include CTL officers and local support officers taking part in wider networks that cross institutions, for instance in special interest groups (SIG's) about blended learning and user groups circling a common educational technology platform.

Focusing on PDI's specifically designed for teachers, this study identifies various methods that incorporate networked professional learning elements held in close proximity to teachers' campuses. The fact that PDI's are organised at de-centered locations, illustrates the benefit of groups with higher homophily (Rogers, 2003). This approach can potentially help combat the initial urge of some teachers to reverse Covid-19 induced positive teaching evolutions, in line with an earlier study by the European Commission (Joint Research Centre (European Commission) et al., 2019). Examples include faculty mentoring programmes (Zhadko & Susan Ko, 2023), such as peer-to-peer and group mentoring during teacher training tracks, as well as collaborative blended learning design sprints. HEI's therefore not only rely on the trainers as coaches, but a shared responsibility between teachers and support staff to foster knowledge and skill building during PDI's. In doing so, a coaching perspective

fosters collaboration by facilitating the earlier mentioned PLC's and professional learning teams (PLT's) (Toll, 2018). These methods align with the concept of effective networked professional learning, which represents a paradigm shift grounded in social learning theories and emphasises teacher agency and collaboration (Oddone, 1905). In addition, one could suggest that this kind of professional development, supported by online learning communities and networks, networked professional learning provides opportunities for teachers to develop their knowledge and skills across diverse areas, while fostering a sense of agency in their professional development journey (Evert & Stein, 2022). Belgian HEI's equip diverse success criteria for social professional development. These include collaboration, situated learning, just-in-time and catch-up strategies, continual learning about new technologies, and dynamic networks that meet the social and technological needs of higher education, as well as foster high levels of collaboration (Littlejohn et al., 2019). Consequently, the adoption of these networked professional learning strategies can significantly enhance the effectiveness of PDI's for teachers, fostering the successful implementation of educational multimedia technologies within higher education institutions.

Apart from the important social elements of teacher professional development at Belgian HEI's, much resemblance is found between PDI and diffusions of innovations. CTL officers are clearly aware of teachers' perceived attributes of innovations such as blended learning and the use of new technologies when they define and facilitate their professional development offerings. As confirmed by Amundsen and Wilson (2012), the diffusion of educational technologies can be achieved by addressing these perceptions through various structures and processes such as departmental and cross-departmental development teams, curriculum redesign groups, mentoring processes, highlighting and modelling of existing practice, project funding and focused workshops. To achieve this, this study distils several aspects for communication strategies, which include PDI's, to consider based on Rogers' diffusion of innovations (Buc & Divjak, 2016; Rogers, 2003). PDI's should emphasise the relative advantage of new technologies over traditional methods, highlighting their potential to enhance student engagement, learning outcomes and efficiency. Compatibility with existing teaching practices and values should also be demonstrated, illustrating how seamlessly new technologies can be integrated. By providing opportunities for trialability, such as pilot projects or hands-on workshops, teachers can experience these technologies in a low-risk environment before committing to their use. Furthermore, professional development initiatives should address the complexity of new multimedia technologies by offering tailored training and support, considering individual teachers' technological proficiency and comfort

levels. Lastly, observability is crucial in encouraging adoption, as teachers witnessing their colleagues' success with new technologies are more likely to implement them. These suggestions harmonise with previous research by Esteve-Mon et al. (2022) which suggest that by incorporating these attributes into PDI's, the adoption and effective use of educational multimedia tools within HEI's can be significantly enhanced.

In addition to the attributes of innovations, Belgian CTL officers play a crucial role in facilitating the innovation-decision process and addressing its challenges throughout their PDI's, thereby providing teachers with support at each stage. These findings provide real-world examples of Sahin's review of the diffusion theory and educational technology-related studies (2006). During the knowledge phase, CTL officers meet the information needs of teachers by providing low-barrier on campus walk-in sessions and sending out newsletters that highlight new technologies, their impact and their capabilities. In doing so, they aim to address teachers' uncertainties, such as the sustainability of technological innovations (Herckis, 2018). Workshops make use of the persuasion stage by showcasing the new technologies with demonstrations, good practises from early adopters and pilot project outcomes highlighting their potential benefits. Surprisingly, this study reveals that newer long-term PDI's address the implementation and confirmation stages of the innovation-decision process. During come-back or catch-up days, these PDI's incorporate reflective practises, allowing teachers to share their experiences and evaluate the effectiveness of the implemented technologies in their specific contexts. This comprehensive approach to professional development addresses not only individual stages of the innovation decision-making process, but also ensures tailored and ongoing support, training and opportunities for faculty members to maximise their use of educational multimedia tools within HEI's.

5.3 Limitations and Future Research

The purpose of this study is to shed light on the dynamic interplay between social structures within higher education institutions (HEI's) and the adoption and use of educational multimedia technologies, as well as the complex pathways that drive their successful implementation. To conclude, professional development plays a critical role in facilitating these multifaceted processes, emphasising the importance of tailored PDI's and the influence of CTL officers in harnessing innovative socio-constructivist methods to improve teaching and learning at scale. As institutions and their professionals navigate the changing landscape of higher education, this research emphasises the critical importance of embracing collaborative efforts, effective professional development that lowers barriers and multiple

communication strategies. Through these efforts, HEI's can move closer towards realising the full transformative potential of diffusing educational multimedia technologies effectively.

Several limitations of this exploratory study must be addressed, however. First, the scope of the study is limited, as it primarily focuses on educational multimedia technologies and explores the perspectives of educational developers and Centres for Teaching and Learning (CTLs), without considering the viewpoints of teachers, students, supporting staff and other change agents across institutions. This study further addresses innovations and change mainly related to video, whilst mostly ignoring other types of multimedia learning, such as presentations and other learning material modalities. Moreover, the emphasis on a social constructivist approach may not capture other significant aspects influencing the deployment and support of these technologies or the more hidden relationships that may exist within HEI's.

Second, the method employed in this study is qualitative, which may introduce recall bias and restrict the generalisability of the findings. The generalisability is further constrained by the small and selective sample size of only four Belgian HEI's chosen by educational developers, resulting from a lack of resources. This may impact the validity and dependability of the findings, limiting the conclusions' applicability to other institutions or contexts with different values, cultures, visions and available resources. Another limitation relates to the interview method used in the study, which may not be sufficient to uncover intricate details regarding the implementation of educational multimedia technologies, considering factors such as the scale of institutions, their history and a detailed overview of the technology usage.

Despite these limitations, the findings of this study offer valuable insights for educational developers, educational technologists and CTL's in HEI's. For future research, it is necessary to broaden the sample size, to include a diverse selection of HEI's and stakeholders, and employ additional data collection methods like surveys or observations. This would contribute to a more comprehensive understanding of the implementation process and provide a robust basis for evidence-based recommendations in higher education. Furthermore, future research could investigate inter-relational networks connecting CTL officers and local support officers, the impact of effective multimedia technology implementations on student learning outcomes, and the interplay of formal and informal networks influencing multimedia adoption across HEI's.

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Author's declaration

I hereby declare that I have written this thesis independently and that all contributions of other authors and supporters have been referenced. The thesis has been written in accordance with the requirements for graduation theses of the Institute of Education of the University of Tartu and is in compliance with good academic practices.

Thomas Claeys
30/05/2023

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Appendices

Appendix 1 - Research Interview Instrument

This research aims to explore the implementation and support of educational technologies that involve video in Belgian higher education institutions. In order to gain an initial understanding of the complex systems involved in professional learning for higher education teaching staff in relation to these educational video technologies, I propose to conduct a semi-structured, qualitative interview, based on (Richardson et al., 2019). Further inspiration was taken from Whitchurch and Gordon's (2010) research about relationships in higher education. In this narrative interview protocol, Everett Rogers' theory on Diffusion of Innovations (2003) is used to guide and structure the conversation combined with personal experience induced questions. The findings of this research will aim to identify existing good practices and provide insights on how to foster the use of video in higher education.

Through interviews, the study will explore the diffusion of innovation elements (innovations, communication channels, time, and social systems) and their relation to contemporary professional development methods. The questions posed in the interviews will target both individual and systemic perspectives, in order to gain insight into the complex social nature of identity, interpersonal relationships, and the steps taken in the implementation of institution-wide video platforms.

Individuals are offered open-ended questions to enable them to describe their work experiences in their own terms. While the interviewer follows a broad guide, the conversation is allowed to flow organically, reacting to intriguing points and urging the subject to hone in on their findings. This strategy can provide comprehensive and nuanced data about individuals' experiences and views (Vähäsantanen & Arvaja, 2022).

This method is not without its faults. Interviews and questionnaires are prone to a memory bias, whereas techniques such as the Experience Sampling Method can overcome this bias by collecting data in real-time (Seifried & Rausch, 2022). By using a semi-structured interview and a targeted sampling method, subjects can only describe their experiences in retrospect and in general terms.

Contradictory, this method can shine a light on what educational developers / instructional designers / educational technologists find important in implementing educational video technologies and their ongoing support of faculty.

The interview guide for four educational developers / instructional designers / educational technologists working ad central offices for teaching and learning from four different higher education institutions in Belgium:

1 General

1. Could you please define in more depth your function, position and responsibilities in your institution? What is your job title and/or what title would best describe you?
2. What types of projects do you typically work on with faculty? Does this involve the use of video?

2 Educational technologies

1. How do you define “educational video technologies” and how are they used in your institution?
2. Which educational technologies does your institution use where video is a significant element?
3. How did these educational technologies enter your institution? What does this decision process look like?

3 Organisational structure

1. Could you describe how your department is positioned in the organisational hierarchy? How does this relate to IT and multimedia departments in your institution?
2. Viewed from your position in your department / centre for teaching and learning, which are your strongest relationships throughout the organisational structures?
3. Which roles or structures are in place for faculty support when it comes to creating and implementing educational video technologies in their own practice? Where are these situated in the organisational structure (formal or informal)?
4. How would you describe your working relationship with faculty on implementing educational video in their course design? How do central support tends to work together with different stakeholders throughout the institution (both central and decentral)?

4 Implementing new multimedia educational technologies and continuous support

1. When introducing new educational technologies, such as those that involve video, what measures does your institution take? What is the process for adoption like?
2. What role do administrators, faculty, and staff play in the implementation and support of educational video technologies at your institution?
3. How do you reach a broad audience? Which channels of communication do you use?
4. Are there any good practices that you have found to be effective for the successful implementation of educational video technologies?
5. What challenges have you encountered in the implementation and support of educational video technologies, and how have you addressed them?
6. Can you describe any formal or informal networks within your institution that support the adoption and use of educational video technologies?
7. How do you measure the success or impact of educational video technologies on student learning outcomes?

8. How do you see the use of educational video technologies evolving in the future at your institution and in higher education more broadly?
9. What advice would you give to other higher education institutions who are looking to implement new educational video technologies?

4.1 Professional development initiatives

1. How do faculty learn about the services of your department? Word of mouth, specific innovation programs, systematic meetings?
2. What is your approach to your personal professional learning? Where do you learn about effective use of educational video and related technological innovations?
3. What are typical subjects you and your colleagues provide for faculty that involve educational videos? Can you describe the professional development opportunities provided by your institution to support the implementation and use of educational video technologies?
4. How does this compare to or compliment professional development initiated by multimedia and IT departments, as well as decentral initiatives?
5. Are there any forms of professional development you and your colleagues gravitate towards? If so, could you describe them?
6. What makes you find these methods effective?
7. What advice do you have for higher education institutions looking to improve their teachers' knowledge and skills for using educational video technologies?
8. Where do you find professional development?
9. In which networks do you take part? Internal, external, formal, informal etc. How do you use these networks?
10. Is there ad hoc support for teachers and supporting staff? What does this involve? Does this differ whether an educational multimediaTool is not yet implemented, yet unknown or already established?

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Thomas Claeys
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Emanuele Bardone
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