O2: DIGITAL COMPETENCIES ASSESSMENT FRAMEWORK

RHYTHM4INCLUSION

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Nature of the deliverable		
R	Report	**R**
Dec	Websites, patents, filling etc.	
Dem	Demonstrator	
O	Other	

Dissemination Level		
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CO	Confidential, only for members of the consortium (including the Commission Services)	

Type of Activity		
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A	Project Management and Implementation	
M	Transnational Project Meeting	
E	Multiplier Event	

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V10	30/03/2020	Petros Lameras	Survey analysis v.2
V11	12/06/2020	Petros Lameras	Findings
V12	30/10/2020	Petros Lameras	Recommendations and conclusions

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1 EXECUTIVE SUMMARY

It is evident from commentators and European policy reports that digital competencies development is key for teachers to learn and persevere in their journey towards using technologies in teaching and learning especially on unprecedented periods of time such as this we are experiencing with the COVID-19 pandemic. To this end, teachers needs to develop existing and new digital skills that would help them to teach in different modes of teaching including blended, distance or face-to-face. There are challenges and risks that teachers need to tackle from different design and teaching orchestration perspectives such as digital resources, quality, equity, ethics, pedagogy and digital inclusion that need to be considered in rethinking digital teaching and learning to be conceived as a more inclusive, resilient and equitable mode of teaching. It is recognised that for achieving this, processes, practices, strategies and policies need to be reinvigorated in a way that teachers would possess the skills, competencies, institutional and policy regimes that would render a technology-based instantiation of teaching

The report presents the DigiRhythmCompTeach framework as scaffold tool for teachers to develop, assess and reflect on existing and envisaged competencies that they intend to practice for digital rhythm-based teaching and learning. It may be overwhelming and challenging for teachers to identify and pinpoint the exact skills they would be interested to focus on when they design and deliver digital rhythm-based teaching and therefore the DigiRhythmCompTeach attempts to alleviate this challenge that teachers are facing by offering 7 digital skills with associated progression levels for teachers to map, compare, and measure their current understanding and practice against these digital skills.

The DigiRhythmCompTeach provides a point of departure for digital skills development especially for rhythm-based teaching but also used for different subject areas and topics that technology is used as a medium to deliver learning. It may also be used in conjunction to the EU's DigiCompEdu framework to strengthen the existing competencies by providing complementary skills especially in relation to data and ethics and digital creativity skills.

It is perceived that the DigiRhythmCompTeach will be a sine qua non tool for EU teachers as it will provide a framework to create, understand and reflect on modern digital skills in a consistent and standardised way inspired by the frameworks and models used by the EU.

2 INTRODUCTION

The report provides a review on, and analysis of, the Digital Competencies Assessment Framework - O2. It starts by elucidating on the 7 digital competencies for rhythm-based teaching with technology constituting the DigiRhythmCompTeach and we permeate our understanding of what do we mean by digital competencies. The seven digital competencies for rhythm-based teaching encompass diverse skills from designing and developing digital learning content and acquiring data, information and data ethics skills to more process-centric skills such as activity-led activities and pedagogies, becoming ICT proficient, developing creativity skills and fostering digital inckusion, responsinsibility and data compliance. We have formulated and designed the DigiRhythmCompTeach in a way that it may not be interpreted as uncanny in the eyes of the teachers but rather as a tool that will be part of a holistic strategy to be put in place for understanding and reflecting on new and existing digital skills that teachers feel they need to develop over their journey as reflective and innovative teachers.

The report has focused on visualising practical examples on how each digital competency aspects may be enacted and used in real classroom settings. Tools, strategies and processes are mapped to competencies as a way to scaffolds teachers' effort to visualise and leverage particular competencies with their own interests and needs.

The report then presents the dimensions of progression for illuminating system with which teachers will pinpoint their current competencies and will also allow them to strategically target their competency progression and further development. The progression model ranges from acquisition to reflection resembling different learning instantiations and levels that the teachers may focus on for developing or combining different skills commensurate context, level of students, subject content aligned with own conceptions of and approaches to teaching.

The report attempts to propagate a relationship between the 7 themes of competencies with the use of technology with the progression levels and therefore simulating different variations of using a particular competency based on a learning aspects that lies on teacher's foci. The endeavour was to construct particular foci for each theme that drive and supplement the development of a competency and adds in a cohesive way subsequent competencies from other themes in a developmental ways.

We have evaluated and assessed the usefulness of the DigiRhythmCompTeach with teachers from the participating counties for understanding the competency level focus that teachers wish to develop and possible developments in competencies they would like to explore in the future.

The report concludes with a set of recommendations for digital competencies development and for teacher digital competency progression and growth.

3 THE 7 DIGITAL COMPETENCIES FOR RHYTHM-BASED TEACHING WITH THE USE OF TECHNOLOGY

In O1 - Design thinking requirements we have analysed, interpreted and presented 7 themes of digital competencies for rhythm-based teaching as experienced by the participating teachers across Sweden, Greece, UK and Cyprus. We perceive digital competences as the *"twinning of knowledge, skills and attitudes to successfully develop, implement and achieve a set of learning goals and outcomes to be orchestrated with the use of technology"*. We have contemplated on the 7 themes to construct a Digital Competency framework that may be used by teachers, digital leaders, educational policy makers and technology-enhanced learning specialists for developing digital capabilities, competencies and skills in rhythm-based teaching using digital technologies. Despite the focused use particularly for technology enhanced rhythm-based teaching, the framework may also be used as a general model by teachers to assess and inform their digital teaching and learning processes as well as a providing a structure for professional development across and beyond Europe. Planning, reviewing and ensuring that the DigiComp elements for rhythm-based teaching and learning are integrated into professional development activities for teachers will pave the way for teachers to have an informed and up-to-dated mechanism and a professional learning companion for enhancing skills, competencies and capabilities in rhythm-based teaching with the use of technology. However, it is worth noting that this framework may be used to map expertise across different staff roles either within a team, individually, or in the organisation in its entirety for improving digital rhythm-based teaching in particular and digital teaching and learning in particular. The 7themes for the rhythm-based teaching competencies framework are:

1. **Designing, developing and delivering rhythm-based digital learning content**

    a. Designing digital content
    b. Developing digital content
    c. Visualising and representing digital content

2. **Acquiring data, information and data ethics skills**

    a. Understanding and tracking student's progress through gathering and analysing data
    b. Finding, retrieving, using, re-using and sharing data and information and content
    c. Using student data ethically by understanding data protection processes including how to process, access and represent personal data.

3. **Developing skills in designing digitally and activity-led rhythm-based activities and pedagogies**

    a. Collaborative learning

b. Inquiry and problem-based learning
c. Activity-based learning
d. Providing multiple modes of feedback

4. Becoming ICT proficient in digital learning environments, devices, applications, software and services

a. Technical use of software and hardware for tracking, recording and representing progress and performance
b. Applying knowledge to solve technical problems with software and hardware
c. Selecting software, hardware and services based on learning and technical requirements
d. Basic understanding of computing, coding and systems thinking

5. Developing digital creativity skills, empathy and a do-it-yourself culture

a. Ideating, brainstorming and designing creative ideas
b. Personalising, sharing and re-mixing rhythm-based activities
c. Empathising with students needs and interests for a custom activity design
d. Producing tangible digital learning resources

6. **Professional development in digital rhythm-based learning**

a. Professional collaboration in developing authentic rhythm-based experiences using sound, music and choreography
b. Provision of professional feedback and reflection on theory and practice
c. Participating in and contributing to an online knowledge building forum for digital rhythm-based professional development.

7. Fostering student digital inclusion, social responsibility and data compliance

a. Embedding equal learning opportunities into the digital learning environment
b. Acting as role models offering best practice examples in implementing technology ethically.
c. Designing digital learning resources that are based on collection and analysis of student data that comply to national and European general data protection regulations and policies.

1. DESIGNING, DEVELOPING AND DELIVERING RHYTHM-BASED DIGITAL LEARNING CONTENT

Teachers' digital competencies in rhythm-based teaching are conveyed through their ability to design, develop and deliver rhythm-based digital learning content. The design, development and delivery of rhythm-based learning content focus on the capability to apply content knowledge and the ability to use the necessary tools and materials for making available digital content to students. The focus of Theme 1 is therefore on sufficient subject knowledge and dexterity of tools and materials for enabling teachers to design, develop and deliver rhythm-based digital learning content.

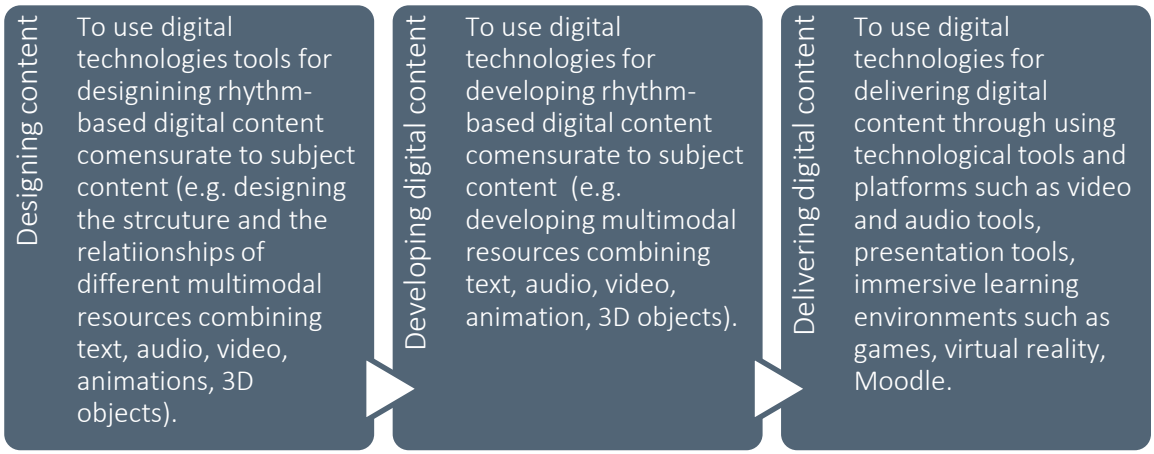


Fig. 1: Designing, Developing and delivering content

2. ACQUIRING DATA, INFORMATION AND DATA ETHICS SKILLS

Teachers that wish to employ rhythm-based teaching with the use of technology need appropriate capacity to collect and analyse data on student's progress, gaps and misconceptions of subject topic. Ability to find and interpret digital information aligned with learning objectives, teaching strategy and students' needs as well as taking a critical approach to evaluating information in terms of its originality, quality, value and credibility. At the same time, understanding what visual data mean to improving student progress as well as inferring visual data for identifying and suggesting ways of learning improvement. Data protection guidelines, copyright rules and in particular how personal data are distributed, processed and visualised is part of having the ability to conceptualise and practice the process of gathering, analysing and using student data in ethical ways.

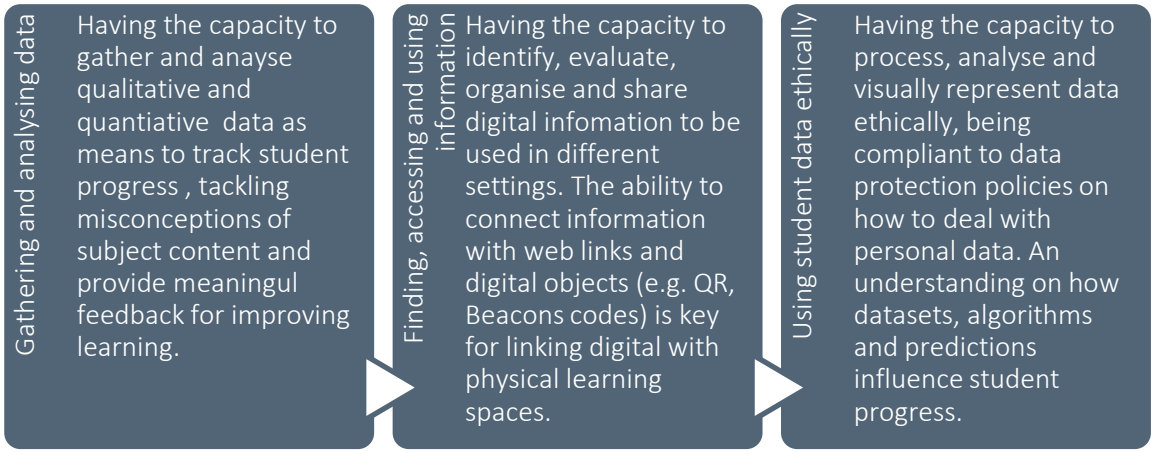


Fig. 2: data collection and analysis, information access and data ethics

3. DEVELOPING SKILLS IN DESIGNING DIGITALLY AND ACTIVITY-LED RHYTHM-BASED ACTIVITIES AND PEDAGOGIES

It is essential for teachers that wish to employ technology for rhythm-based teaching to be able to use an array of student-centred approaches for planning, designing and orchestrating practice. Collaborative learning is a core approach to digital learning especially when materialised with tools that promote dialogical processes and vicarious practices. Creating social interactions such as synchronous and asynchronous chat tools, gamified collaborative dialogue mechanisms, virtual collaborative activities linking tangible musical instruments with virtual dance rooms are processes that a teacher needs to know how to design and implement. The centrality of inquiry as a process of posing questions and learning how to collect and analyse evidence for identifying and resolving problems may be enacted with associated digital tools such as QR codes and beacons for conducting research on tangible objects such as musical instruments and dancing objects. Helping students to learn how to identify and design questions or determining and collecting evidence. By mixing and matching question-making with problem identification and definition is an inter-changeable strategy in enacting inquiry and problem-based learning. Activity-based learning is the umbrella system for situating and nurturing inquiry-based and problem-based activities through orientation, collection and culturally mediated digital tools (serious games, VR / AR, location-based simulations) focusing on the social and situated dimensions of rhythm-based learning which usually are organic, ill-defined and unpredictable. Technology-based feedback is usually exhibited, represented or visualised to students during and after the digital activity. Multiple ways of designing and representing feedback for helping students to understand the entire spectrum of the different learning nuances (e.g. comparing performance through numerical feedback – a scoring system or explaining in details what student needs to do for overcoming a learning difficulty through - a textual log file or even quickly praising students instantaneous response to a question via - a virtual badge or getting experience points are fundamental design skills for teachers to attain.

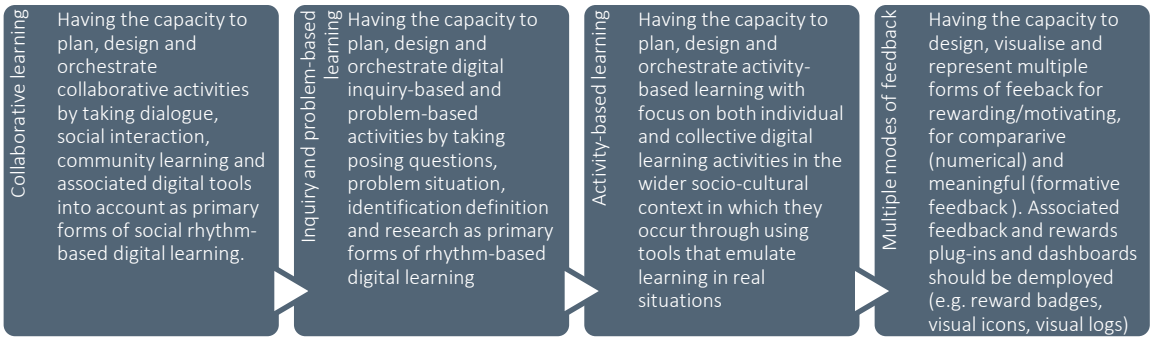


Fig. 3: Collaborative, inquiry, problem-based, activity-based and modes of feedback

4. BECOMING ICT PROFICIENT IN DIGITAL LEARNING ENVIRONMENTS, DEVICES, APPLICATIONS, SOFTWARE AND SERVICES

The confident technical use of new and existing digital learning software and hardware for delivering digital rhythm-based learning along with confident use of associated software and hardware for tracking, recording and visualising performance and progress is key for teachers to be able to identify and resolve technical problems that may occur before, during or after the digital learning session. The teacher needs to apply relevant technical knowledge for resolving technical problems that may influence an array of different learning tasks such as from problems with logging in a synchronous conference system due to Internet connection issues or registering students to the online platform to more complex problems such as setting-up an immersive virtual world or providing any missing data to an assessment system for visualising and inferring data-informed outputs on student's performance. Collecting requirements for making recommendations on most efficient, feature-rich and cost-effective software and hardware is key for maintaining and updating digital equipment. Creative thinking starts from the teacher as to be able to generate creative thinkers' apprenticeships, creative processes such as computational thinking and knowing how to code simple software is a starting point to promote certain creative skillsets and systems thinking from a more technical perspective.

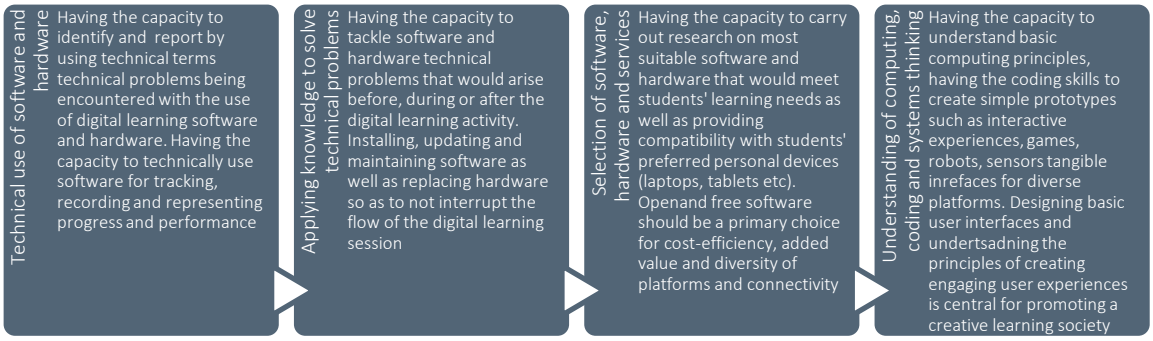


Fig. 4: Technical use of software and hardware, solving technical problems, selection of software and hardware and understanding of computing

5. DEVELOPING DIGITAL CREATIVITY SKILLS, EMPATHY AND A DO-IT-YOURSELF CULTURE

Learning within a creative society requires teachers to develop creativity skills especially when the aim is to design rhythm-based activities which are highly creative by nature. Supporting teachers' development by encouraging creative thinking and imagination in employing technology for designing rhythm-based activities is a fundamental skill. However, designing creative rhythm-based activities is always challenging and requires a balance between structure and freedom to support students' creative capabilities and capacities. There is always a fine line between when teachers to step in or when to step back, when to ask or when to listen. Encouraging students to come up with ideas and start imagining is always an engaging initiative. Teachers may think different ways of igniting students' curiosity and imagination in creating ideas such as through asking them online questions about subject-topic questions or using creative technology such as games, simulations, game authoring environments (e.g. Scratch, Arduino) for start doing their rhythm-based activities. Showing sample projects and activities to spark their imagination and connect with their interests is a way forward as well as reusing techniques, tools and processes for mimicking past ideas and projects and modifying existing examples. Helping students to personalise and share ideas is key for incorporating what makes sense to them and then making a community with other students that share similar ideas, interests and motivations may advance learning in more participatory ways. Focused questions need to be designed for asking students what would they do differently? How would they embed their own personal interests to an existing rhythm-based project? or what new elements and features would they add to further develop their project? Creating interactions and personal relationships with students through discussing about their learning goals, aspirations, projects and creations will generate a partner link between the teacher and the student through building skills, capacities and tangible creations together. Designing and developing activities that students make their own creations by using tools, toys and materials via games and robotic kits, sensors and 3D printers may extend their creative capabilities and build multidisciplinary skills in music and dance, coding, designing, engineering and project management.

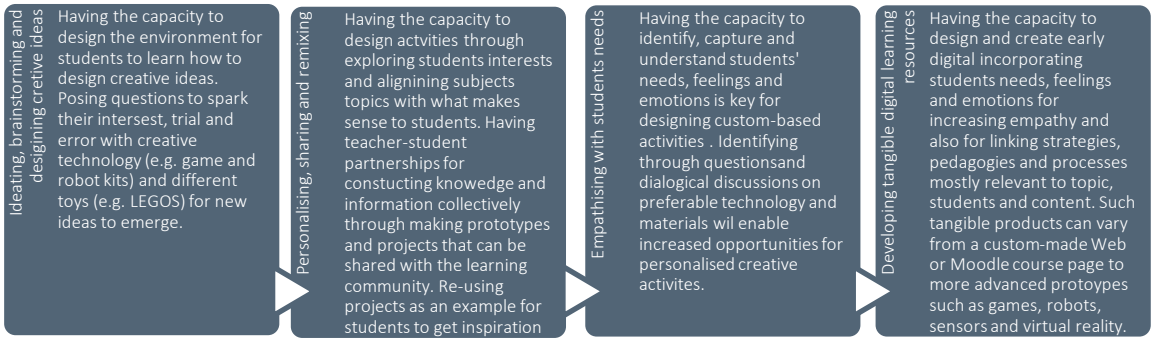


Fig. 5: Ideating, personalising, empathising and developing tangible learning resources

6. DIGITAL PROFESSIONAL DEVELOPMENT

Combining, integrating and employing digital capacities and capabilities with rhythm-based activities such as sound, music and dance is a sine qua non process for leveraging and improving rhythm-based learning with the use of technology. It is therefore key for teachers to enact, primarily, digital technologies to enhance rhythm-based practices but also to initiate, develop and sustain knowledge-based communities that would enable the participating teachers to learn, share and communicate best practices in using technology for rhythm-based learning. Professional collaboration in designing authentic and digital rhythm-based experiences will enable teachers to engage with peers and colleagues for improving, rethinking and re-calibrating digital rhythm-based learning whilst establishing an informed way of instigating digital tools and processes for emulating what real practitioners in using rhythm in professional settings. Receiving and giving professional feedback on how digital rhythm-based learning has been designed and enacted in terms of digital tools, multimedia, learning modes and strategies may be viewed as a reciprocal process of professional development and knowledge building of value to the community. This mutual knowledge building relationship through feedback may lead to constructive reflective processes as means to refine and rethink the design and orchestration of digital rhythm-based learning. Feedback and reflection are aspects of the teaching process that can be further developed and learnt and essential be considered as principles that may improve practice significantly. To provide a mechanism that contributes to the creation of a system that facilitates on the exchange, sharing and reflection of digital rhythm-based learning, a knowledge building forum on digital rhythm-based teaching and learning is essential for teachers' continuous digital professional development encompassing demonstrations and best-practices and resources available for designing and practicing digital rhythm-based learning.

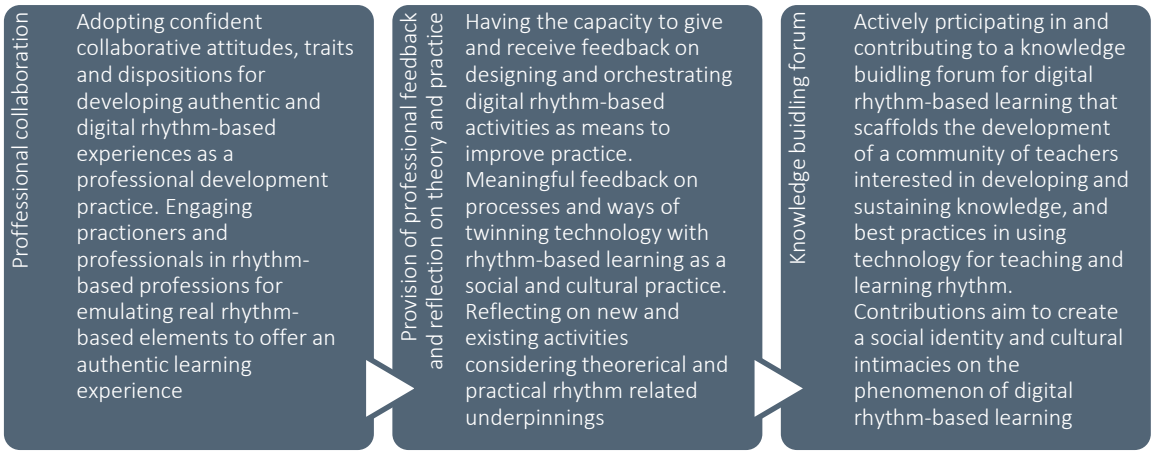


Fig. 6: Professional collaboration, reflection on theory and practice and knowledge building

7. FOSTERING STUDENT DIGITAL INCLUSION, SOCIAL RESPONSIBILITY AND RELATEDNESS

Using technology for enhancing rhythm-based learning should encompass aspects of inclusivity, accessibility and ethical practice. Digital participation, interaction and differentiation strategies need to be embedded in all aspects of digital rhythm-based learning (e.g. synchronous and asynchronous communication, interactive content, digital resources and activities). Ethical considerations are key in ensuring that digital rhythm-based learning is premised on principles complying to privacy, data protection and freedom of speech by following a non-discriminatory, non-invasive use of power and authority. Accessing materials, activities and resources should be made available to all students whilst ensuring that the way that are being designed and delivered online or virtually will not aggravate any personal circumstances, inequalities, or lack of access to technology and resources due to socioeconomic issues. To this sense, teachers and facilitators should act as ambassadors of social responsibility and good practice in using technology ethically, transparently and inclusively. This exerted digital inclusion and social responsibility may need to be apparent in designing data collection instruments such as surveys and questionnaires on eliciting students' prior learning experiences for increasing personalisation, engagement and motivation. Prior learning experiences are meant to be used as data on students' varied ways of learning and the tools available that can be used by teachers to collect and analyse student's data should comply to national and European General Data Protection Regulations and Policies.

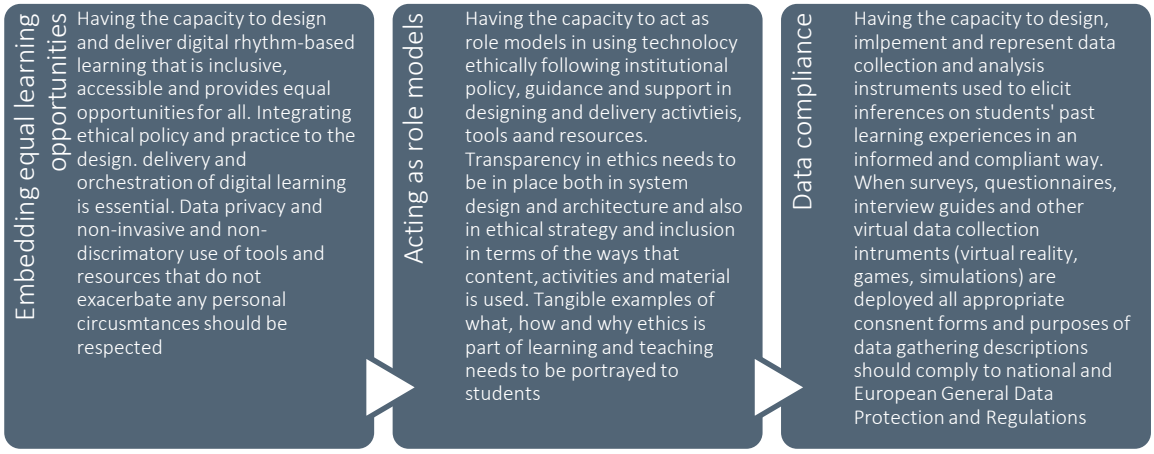


Fig.7: Equal learning opportunities, role models and data compliance

4 OVERVIEW OF THE 7 THEMES OF RHYTHM-BASED TEACHING

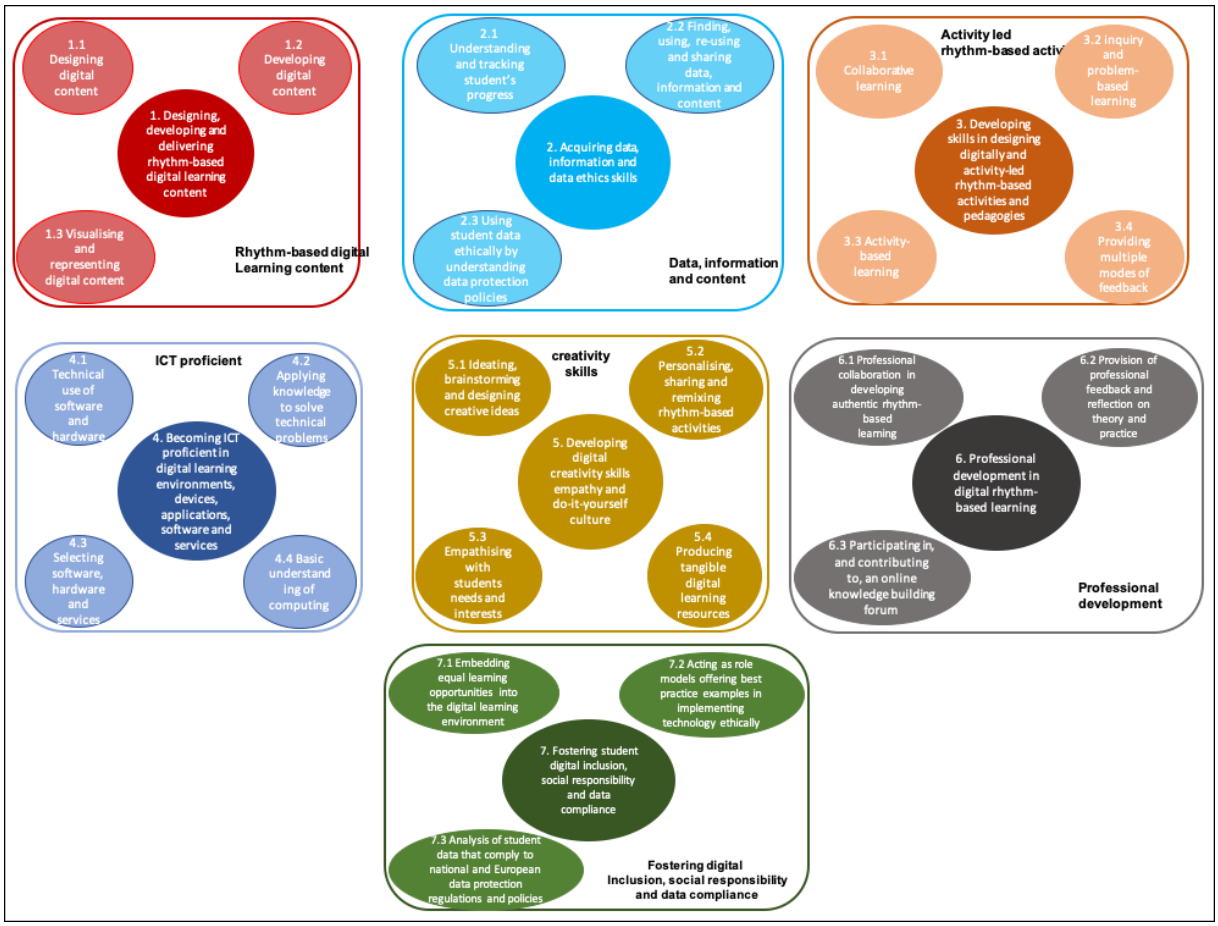


Fig. 8: The 7 themes of rhythm-based teaching with the use of technology

5 THE DIMENSIONS OF PROGRESSION

We have developed a self-assessed progression model as means to help teachers to develop digital skills for rhythm-based teaching and learning. The progression model may help teachers to identify capabilities and skills that have not been developed and also it may help teachers to enhance existing skills and capabilities that would allow them to better integrate technology into their rhythm-enabled teaching and learning practice. To this end, the model is composed of different progression levels that would describe variation in digital competence development. The digital competence stages are twinned to the six proficiency levels used by the Common European Framework of Reference for Language (CEFR), ranging from A1 to C2.

We have decided to use CEFR as to harmonise and inter-connect the progression model used in the DigiCompEdu framework with the DigiRhythmCompTeach framework proposed in

this project. Establishing coherency, consistency and standardisation with European frameworks is the axis of the DigiRhythmCompTeach's progression model. Other benefits of using the CEFR is teachers' familiarity to interpret the taxonomy and discern a subjective understanding of their competencies in rhythm-based teaching with the use of technology. The taxonomy could also be generalised in broader technology-enhanced learning contexts that could be used in par with the DigiRhythmCompTeach. A general consensus was that the DigiRhythmCompTeach is an open access resource and as such we have carefully selected our instruments to reflect this premise of removing any price or permission barriers of using DigiRhythmCompTeach. Deconstructing the competencies to different levels would allow teachers to understand and focus on the nuances that comprise each competency and plan on how the competency will be acquired and developed progressively. As in DigcompEdu, the CEFR levels may be perceived as a metric that discourages teachers to develop and self-assess digital competencies for Rhythm-based teaching because of its linear and normative orientation. However, it is not meant to be as an assessment tool for performance appraisal, but rather it is evoked as a supportive metric as means to identify, understand and delineate progress and self-reflection. The seven competencies along with their variations are coupled with learning goal descriptors, ranging from Acquisition (A1) to Reflection (C2).

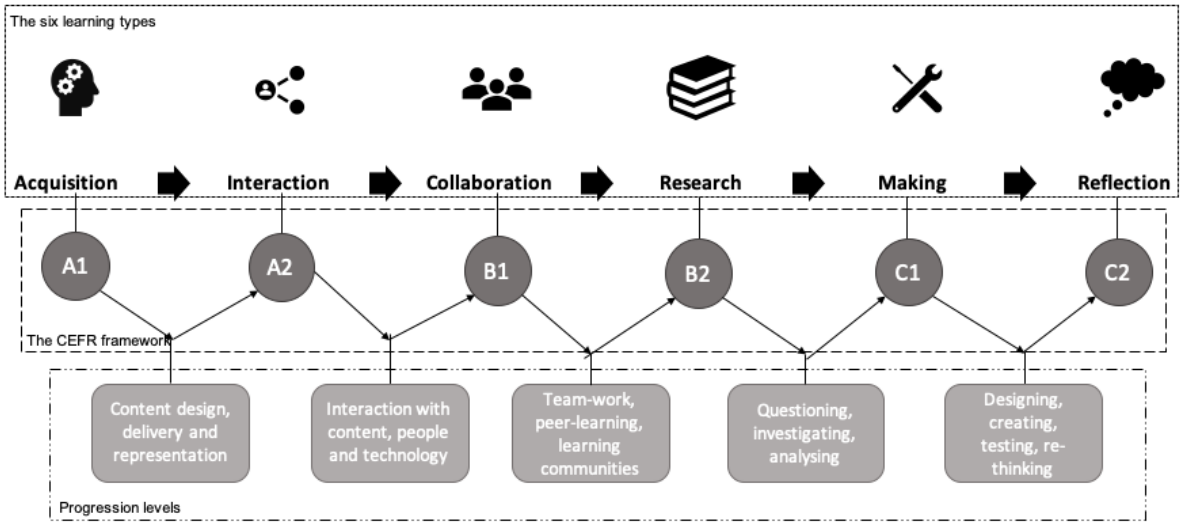


Fig. 9: The DigiRhythmCompTeach progression model

Specifically, these learning goals descriptors run through the seven categories and they are qualitatively different to inform the associated competency. The descriptors were inspired from Laurillard's six types of learning spanning from acquisition discussion and practice to production, collaboration and investigation. In the first two stages, **Acquisition (A1)** and **Interaction (A2)** the focus is on content design, delivery and representation **(A1)** and on interaction with teachers, peers, content and technology **(A2).** In **Collaboration (B1)** and **Research (B2)** the focus is on working in teams and creating online learning communities based on interests and needs **(B1)** and transitioning to conducting research through, posing questions, initiating investigations, analysing and constituting evidence **(B2).** Then, the focus

shifts from Research (**B2)** to **Making (C1)** with emphasis on creating, tinkering and making tangible products and artefacts to **Reflection (C2)** for critically reflecting on what it has been learnt across the seven themes.

The 7 Themes of Rhythm-based Teaching Competencies with the Use of Technology	Progression Levels					
	Acquisition (A1)	**Interaction (A2)**	**Collaboration (B1)**	**Research (B2)**	**Making (C1)**	**Reflection (C2)**
1. Content design and delivery	Designing, developing and delivering subject content for helping students to acquire information	Designing, developing and delivering subject content for helping students to interact with teachers, peers, content and technology	Designing, developing and delivering subject content for helping students to engage in collaborative learning	Designing, developing and delivering subject content for helping students to engage in research	Designing, developing and delivering subject content for helping students to cultivate creative and making mindsets	Designing, developing and delivering subject content for helping students to critically reflect on subject-content
2. Acquiring data, information and data ethics	Collecting, analysing and visualising data on student's subject content and information acquisition	Collecting, analysing and visualising data on student's interactive processes with teacher, peers, content and technology	Collecting, analysing and visualising data on student's collaborative learning processes	Collecting, analysing and visualising data on student's research-based learning processes	Collecting, analysing and visualising data on student's creativity and making processes	Collecting, analysing and visualising data on student's reflective processes

3. Activity-led rhythm-based strategies	Employing activity led-strategies that support students to acquire information and subject content	Employing activity-led strategies that support students to interact with teachers, peers, content and technology	Employing activity-led strategies for designing collaborative activities	Employing activity-led strategies for designing research-based activities	Employing activity-led strategies for designing activities that encourage students to create and make	Employing activity-led strategies for designing activities that encourage students to critically reflect on learning
4. ICT proficiency	Utilising software and hardware that affords students to acquire information and subject content	Utilising software and hardware that affords students to interact with teachers, peers, content and technology	Utilising software and hardware that affords students to participate in and contribute to collaborative learning	Utilising software and hardware that affords students to participate in and contribute to research-based learning	Utilising software and hardware that affords students to participate in and contribute to creative and making processes.	Utilising software and hardware that affords students to critically reflect on their learning
5. Digital creativity skills	Designing learning environments that support and guide students to acquire information and subject content creatively	Designing learning environments that support and guide students to interact with teachers, peers content and technology creatively	Designing learning environments that support and guide students to engage in creative collaborative learning	Designing learning environments that's support and guide students to participate in and contribute to research-based learning creatively	Designing learning environments that supports and guides students to cultivate creativity and a do-it-yourself culture	Designing learning environments that support and guide students to critically reflect on their creative learning

6. Professional development	Engaging in professional development opportunities that focus on how to design and deliver information and subject content	Engaging in professional development opportunities that focus on how to design learning environments for students to interact with teacher, peers, content and technology	Engaging in professional development opportunities that focus on how to design learning environments for students to engage in collaborative learning processes	Engaging in professional development opportunities that focus on designing learning environments for students to engage in research-based learning processes	Engaging in professional development opportunities that focus on designing learning environments for students to cultivate creative thinking	Engaging in professional development opportunities that focus on designing learning environments for helping students to engage in reflective and critical thinking
7. Digital inclusion, social responsibility and data compliance	Designing and delivering inclusive, accessible and ethical information and subject content	Designing learning environments that support and guide students to interact with teachers, peers and content in inclusive, accessible and ethical ways	Designing learning environments that support and guide students to engage in collaborative learning in inclusive, accessible and ethical ways	Designing learning environments that support and guide students to engage in research-based learning in inclusive, accessible and ethical ways	Designing learning environments that support and guide students to engage in making and creativity in inclusive, accessible and ethical ways	Designing learning environments that support and guide students to engage in reflective thinking in inclusive, accessible and ethical ways

Table 1: The DigiRhythmCompTeach framework

The labels of each phase capture the particular experience of the competence that needs to be developed. For example, in **Acquisition (A1),** the competence focus in on the acquisition of learning through the design and delivery of subject content and information. In **Interaction (A2),** the focus of attention is to utilise interactive processes with teachers, peers, content and technology running through each digital competence. In **Collaboration (B1)** the focus is on encouraging collaborative processes and participation in online communities and in **Research (B2)** the focus is on participating in, and contributing to, research processes. **In Making (C1)** the focus is on creativity and crafting digital objects and in **Reflection (C2)** the focus is on re-thinking on learning and teaching already experienced as well as planning out future learning.
The progression model may also scaffold the process of identifying and mapping roles and competencies of different teachers participating in a project. For example, if a particular teacher is more confident with Interaction (A2), they can work towards developing interaction with content, people and technology across the seven digital competency themes. If a teacher is more familiar with Research (B2), then they can engage in ways of designing and delivering research-based learning and teaching across the themes. Teachers may also be familiar with more than one dimension simultaneously such as with **Acquisition (A1)** and **Reflection (C2**). Amalgamating multiple competency levels developed by a teacher may provide a more consistent, systematic and strategic approach to planning, assessing and consciously reflecting on competencies for rhythm-based teaching and learning with the use of technology. In this sense, different espoused and actual competencies perceived by one teacher could be combined and complemented with competencies that other teachers may have in their repertoire of skills and capabilities.
The DigiRhythmCompTeach supplements and extends the purpose and rigour of the DigCompEdu as its overarching focus is on the design and orchestration of rhythm-based teaching and learning with the use of technology from a more hierarchical, inclusive and developmental approach to rhythm-based teaching and learning with the use of technology progression. The proficiency levels in the DigCompEdu put emphasis on the level of competencies and skills that a teacher may feel they hold resembling a hierarchical scoring schema (e.g. from newcomer to explorer, to integrator, to expert, to leader and to pioneer) rather than a set of competencies that focus on a vicarious learning type or outcome that teachers need to meet or achieve, a design focus most prevalent in the DigiRhythmCompTeach. Building on competencies and skills that are sought to address a learning outcome or goal may be a more rigid, constructive and developmental approach to digital competencies development as there may be a more explicit relationship between the nuances of a particular competence with its proliferated objective and purpose. As such, the competency variation between and within the competencies and the proficiency levels are represented in a more natural and inclusive way by delineating the developmental change of a competency. For example, the content design and delivery competency has a continuum from subject content design and delivery for acquiring information, subject content for creating interactions, subject content for engaging in collaboration, subject content for engaging in research to subject content for making and reflecting. When the teacher develops A1 the competencies developed from A1 are inclusive to A2 and the competencies developed in A2 are inclusive in B1 and so on. Essentially, the progression and the development of competencies achieved from one level constructs and delimits the competencies and skills to be developed in the next level making the competency skill development process compartmental, relational, connected and total (see figure 10).

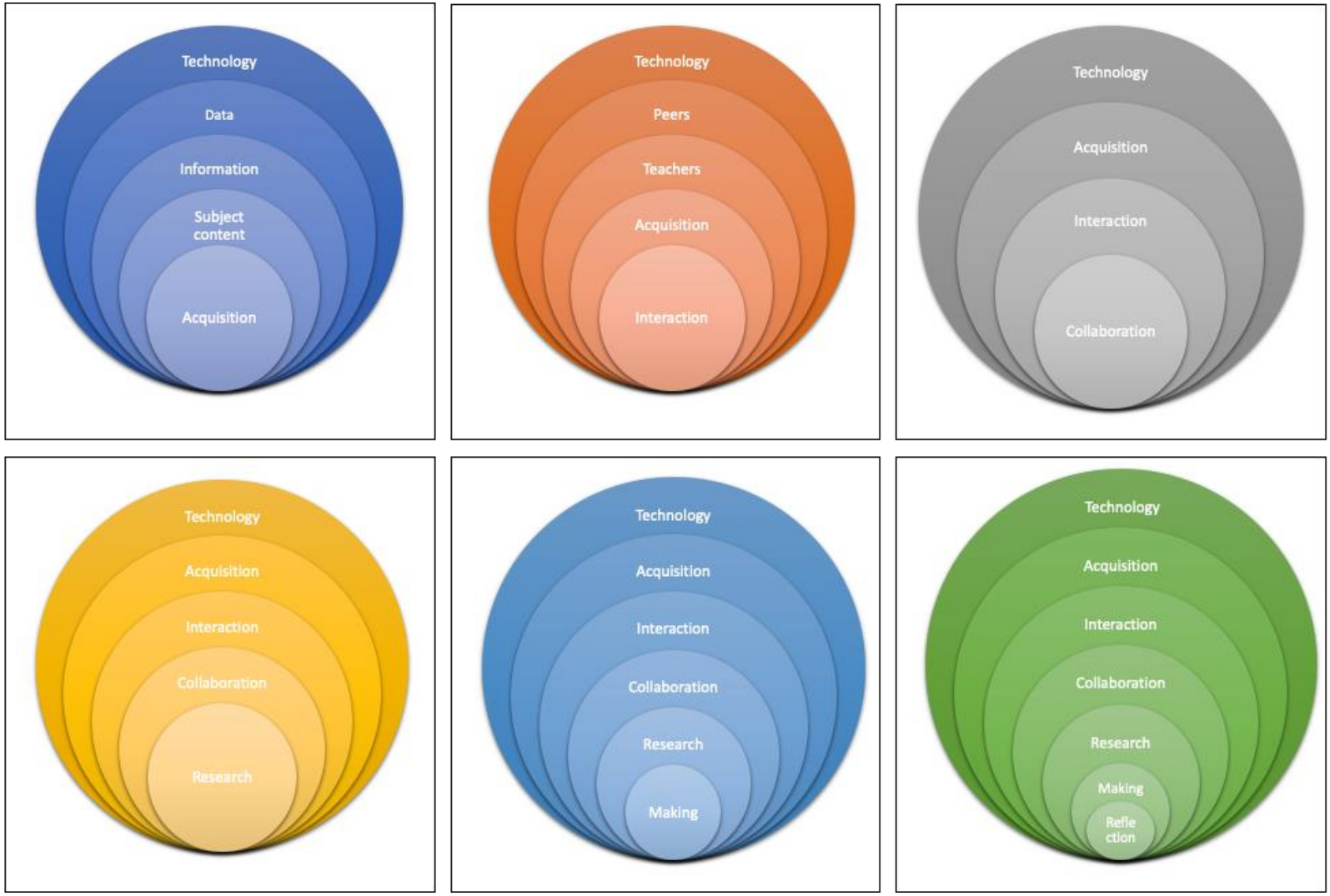


Fig. 10: focal Inclusiveness, and peripheral awareness of the dimensions of progression

In figure 10, we are visualising and representing the inclusiveness, hierarchy and focus of each dimension of progression. For example, in the acquisition dimension, the primary focus is on subject content and information delivery as well as on data and technology. In the second dimension, interaction the focus is on interacting with content, teachers, peers and technology. In the third dimension the main focus is on collaboration (i.e. teamwork and the creation of learning communities), interaction is a secondary focus and acquisition of content and technology is in the periphery. In the fourth dimension, the main focus is on research and collaboration and interaction becomes a secondary focus while acquisition and technology are in the periphery. In the fifth dimension making and creativity is at the focus while research, collaboration and interaction reside as a secondary focus and acquisition and technology in the background. In the sixth category, reflection is the focus, and making, research and collaboration is a secondary focus while acquisition and technology resit in the background of the dimension. It is axiomatic therefore to realise that the properties and aspects of previous progression dimensions are included as sub-properties of the upcoming levels to form the whole of the dimension.

To this end, we perceive that all levels of progression are of equal value and importance to be developed as to gain a complete and impartial experience of developing and reflecting the competencies, capabilities and skills necessary for enabling teachers to adopt rhythm-based teaching in their practice. In line to this, each dimension insinuates a continuity within and between the progression levels but at the same time an autonomous and independent instantiation and development of a specific competence along with its variations as the progression dimension delineates it. As such the DigiRhythmCompTeach framework may be employed, utilised and used either for developing single competencies based on a single progression dimension or multiple competencies based on multiple progression dimensions for experiencing the entire spectrum of the competencies in their totality.

6 EXPERIENCES OF USING THE DIGIRHYTHMCOMPTEACH FOR DEVELOPING DIGITAL COMPETENCIES IN RHYTHM BASED TEACHING

In this section, we investigate teachers' experiences of using the DigiRhythmCompTeach for developing competencies in rhythm-based teaching. The main focus of this investigation was to understand what teachers perceived as developing digital rhythm-based competencies using the DigiRhythmCompTeach framework.

To achieve this, a survey was designed and disseminated to teachers for reflecting on their experiences of using the DigiRhythmCompTeach framework in terms of its effectiveness and usability to assess digital skills and competencies related to rhythm-based teaching as defined in IO3.

The survey[1] was a mixture of closed and semi-structured questions designed to delineate both context and structure (e.g. how do you develop and assess digital skills) or (how would you indicate your level of digital competencies) and semi- or -open structured to delimit nuanced and deep interpretations of how teachers experiencethe use of the DigiRhythmCompTeach for developing existing rhythm-based skills and also for developing new skills. A small-scale study was designed with ten participants (n=10) responded to the questionnaire to elicit their views, beliefs and ways of using the framework for developing rhythm-based teaching. Two

[1] https://bit.ly/3m8MtVp

(2) participants were from the UK, two (2) participants from Sweden, one (1) from Greece and one (1) from Cyprus. The age groups of the students that the teachers were teaching to range from 6-18 years old. The educational level spanned from primary (4), secondary (1) and tertiary (1) (n=6 in total). The topics and the subject content that teachers taught were from more social subjects such as languages, music and arts to more science subjects such as mathematics and computer science.

6.1 FINDINGS

We attempted to diagnose technology usage for designing and delivering teaching as to understand dexterity and existing engagement in using technologies for teaching and learning. 83.3% of the participants responded that they use technologies for teaching and 16.7% responded that they are not using technologies for designing and delivering teaching (Figure 10)

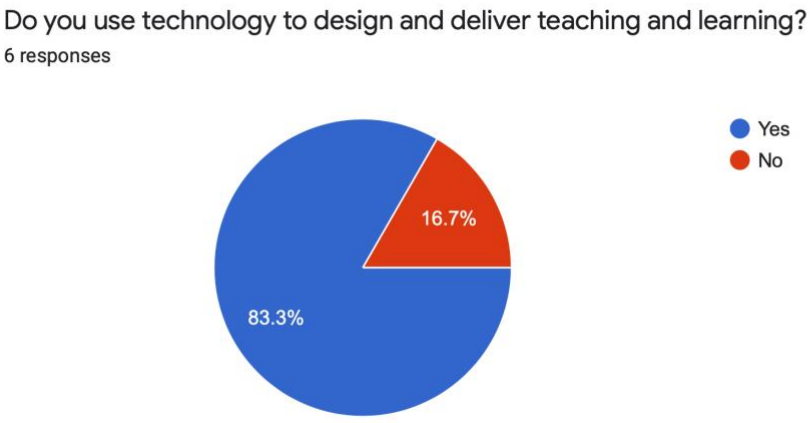


Fig.11: Usage of technology to design and deliver teaching and learning

In conjunction to this, it was central to our understanding to elicit how teachers go about developing and assessing their skills. 88.3% argued that they develop their skills in more informal ways via sharing and exchanging ideas and resources with fellow-teachers while 33.3% were using other digital competencies and frameworks. There were null responses on engaging to online courses or participating in professional development workshops (Figure 12).

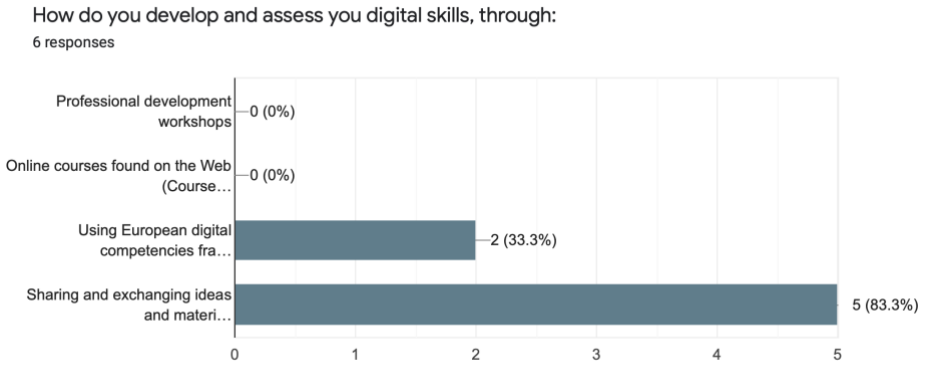


Fig.12: Current ways of developing digital skills

Most of the participants found it useful to develop digital skills for improving rhythm-based teaching and learning 83.3% while 16.7% perceived that it is not useful to develop digital skills and competencies for improving rhythmed-based teaching and learning (Figure 13).

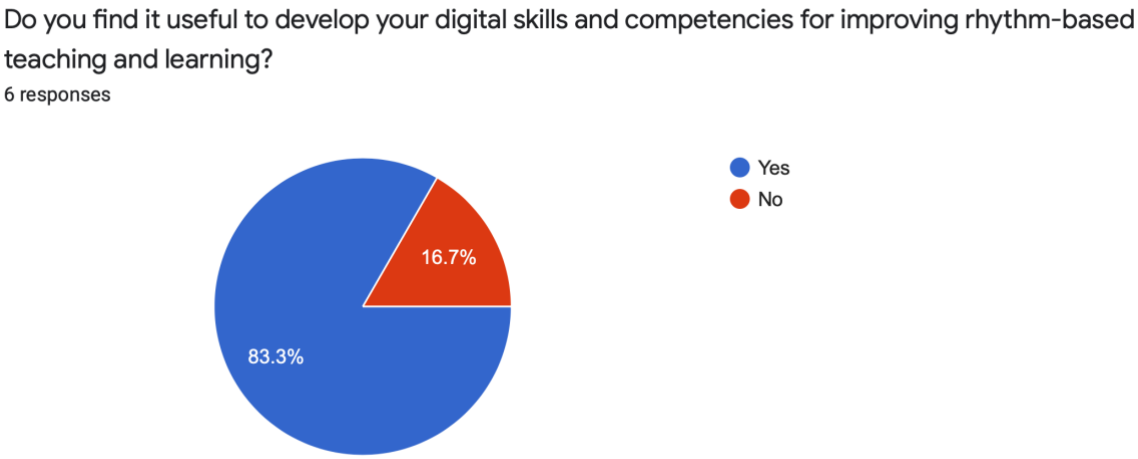
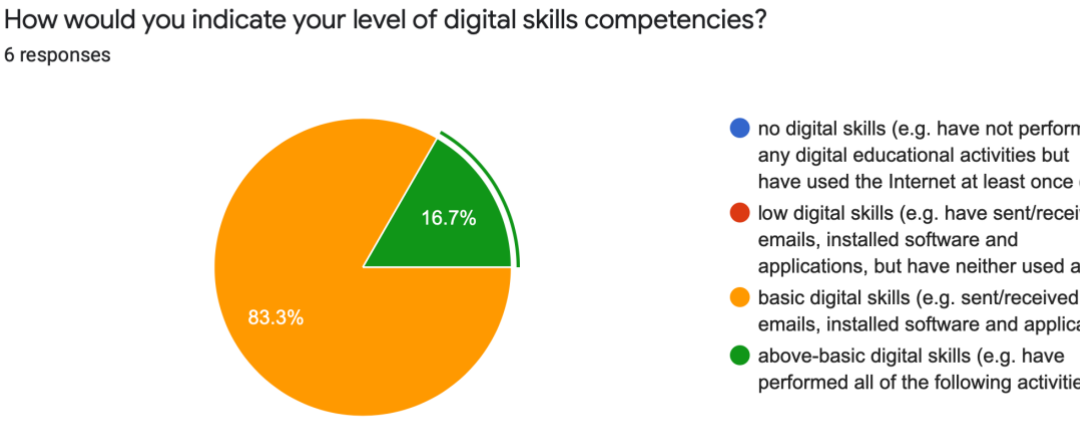


Fig.13: Usefulness of developing digital skills and competencies for rhythm-based teaching and learning

Participants indicated the level of proficiency on digital skills competencies where the 83.3% perceived that they have basic skills such as sending / receiving emails and having installed software and applications and 16.7% of the participants reported that they had above basic digital skills. This coendures to the fact that teachers need to focus more on digital skills development beyond basic digital skills as means to exploit the breadth and depth of the technology possibilities available to them as to be used for the benefit of introducing digital rhythm-based teaching and learning (Figure 14).



We attempted to have an understanding of how teachers perceived and used the framework in deeper ways focusing on each theme of the framework. Starting from content design and delivery, participants felt that it is substantial for them to learn how to design digital content and deliver it with different types of technology: I would certainly want to know to design content for helping my students to acquire information and for creating engaging presentations (participant 1). "Creating content for interacting with students through dance is essential (participant 2). In total, 5 participants reported that they would need to develop skills for helping students to acquire information and 1 said that they wanted to develop subject content that would encourage students to interact with teachers, peers, content and technology.

Theme 1: Content design and delivery

Progression level	**Number of participants**
Acquisition (A1)	5
Interaction (A2)	1

Table 2: Progression levels teachers perceived as central for content design and delivery skills

In terms of acquiring data, information and data ethics, teachers perceived that developing skills on collecting and analysing data on student's subject content and how students have learned content was quite essential. "I want to learn how the student is progressing through analysing the data on the knowledge that they acquired" (Participant 3). "I am curious on how students interact and always wanted to know how to have access to such data" (Participant 6)

Theme 2: Acquiring data, information and data ethics	
Progression level	**Number of participants**
Acquisition (A1)	4
Interaction (A2)	2

Table 3: Progression levels teachers perceived as central for acquiring data, information and data ethics

With regards to progression levels based on Theme 3: activity-led rhythm-based activities, teachers felt that they need to develop skills towards to employing activity-led strategies for helping students to acquire information and subject-content (A1). For example, a teacher argued "In my daily work I use rhythm as a method to help students to learn curriculum subjects. So it would be helpful for me how to use rhythm-based strategies as an active approach to direct them to relevant content" (Teacher 03). Rhythm-based strategies therefore was perceived as activity-based as students are engaged in physical activities. Also, adopting skills that will enable teachers to design activity-led strategies such as dancing, playing music or exchanging ideas and information using technology as a way to enhance interactivity after class was felt as a key skill (A2). "We sing altogether with my guitar, and then we interact with each other. But I wanted to be able to use technology to increase this interaction with my students beyond what we do in class" (Teacher 06)

Theme 3: Activity-led rhythm-based strategies	
Progression level	**Number of participants**
Acquisition (A1)	3
Interaction (A2)	3

Table 4: Progression levels teachers perceived as central for designing activity-led rhythm-based activities

For the ICT proficiency levels in Theme 4, teachers were leaning towards (A1) as means to getting to know how to use systems, both software and hardware that display and visualise subject content and information that it is challenging for students to comprehend or understand. "I want to be able to use systems that focus on subject content access and use" (Teacher 02). "Being able to structure complex subject content in a way that students will be able to understand it, easily access and digest" (Teacher 05)

Theme 4: ICT proficiency	
Progression level	**Number of participants**
Acquisition (A1)	6

Table 5: Progression levels teachers perceived as central for gaining ICT proficiency

In Theme 5, digital creativity skills, the progression level that felt most important for teachers to get expertise and competencies was (A1) as a way of presenting and delivering content and information in creative ways for students to access and retrieve. This may enable students to get a "wider perspective on creative ways of using rhythm" (Participant 03) as well as "developing creative tools for delivering content" (Participant 02).

Theme 5: Digital creative skills	
Progression level	**Number of participants**
Acquisition (A1)	6

Table 6: Progression levels teachers perceived as central for gaining ICT proficiency

In Theme 6, professional development, teachers' progression levels and competency development interests were focused on learning how to use software and hardware for developing content (A1) including developing skills in using ICT for rhythm-based teaching in more generic ways. "I would like professional development to focus on how to create, access and retrieve content and material" (Teacher 04) and to improve or creating an awareness of how to use ICTs. "I want to improve my ICT skills" (Teacher 06).

Theme 6: Professional development	
Progression level	**Number of participants**
Acquisition (A1)	6

Table 7: Progression levels teachers perceived as central for professional development

In Theme 7, digital inclusion, social responsibility and data compliance, teachers' progression focus was on (A1) designing and delivering inclusive, accessible and ethical information and subject content and (A2) designing learning environments that support and guide students to interact with teachers, peers and content in inclusive, accessible and ethical ways. "It is important for my teaching to be able to create content that is ethical, inclusive and transparent without insulting particular learning groups" (Teacher 05). Designing learning in way that encourages students to discuss, negotiate, and defend ideas in inclusive, gentle and non-offending ways for peers and teachers is what learning is all about" (Teacher 06).

Theme 6: Digital inclusion, social responsibility and data compliance	
Progression level	**Number of participants**
Acquisition (A1)	4
Interaction (A2)	2

Table 8: Progression levels teachers perceived as central for digital inclusion, social responsibility and data compliance

7 RECOMMENDATIONS AND CONCLUSIONS

From the findings of the DigiRhythmCompTeach evaluation, we propose the following recommendations in terms of developing further digital competencies frameworks and also inntersm of focusing on specific competencies that will most likely help teachers to develop digital skills that will help rhythm-based teaching with the use of technology:

Recommendations on developing digital competency frameworks

1. Design and develop progression models that depict, delineate and assess competencies and skills as experienced by the teachers as means to provide personalised support and assessment on competencies most relevant to the teachers
2. Provide a digital competency framework that may be accessed digitally anytime from anyplace through the Web, mobile and desktop computers
3. Provide a digital competency framework that provides rapid results to the teachers on their existing competencies and suggestions on how to develop them
4. Provide a digital competency framework that will engage, motivate and help teachers to develop digital competencies and skills through playful and gamified interfaces.
5. Connect and relate in more rigid and data driven ways prior digital skills, experiences and context of teaching with digital skills to be assessed as to offer a more personalised and customised competency-development experience.

Recommendations on focusing on specific competencies that teachers would most likely need to focus for rhythm-based teaching

1. In conjunction with the findings of this usability study, we propose that teachers that are interested in developing digital skills for rhythm-based teaching and learning to focus on mastering acquisition (A1) and Interaction (A2) aspects of their competencies across all 7 themes of rhythm-based teaching competencies and towards the acquisition and interaction dimension of progression (see Fig. 10)
2. In conjunction with the findings of this usability study, we propose that teachers that are interested in developing digital skills for rhythm-based teaching and learning to extend and build skills towards more advanced variations of the progression model such as collaboration (B1), Research (B2), Making (C1) and Reflection (C2)

3. In conjunction with the findings of this usability study, we propose that teachers that are interested in developing digital skills for rhythm-based teaching and learning to mix and match different progression levels (e.g., A1 with B2) or (A2, B1, C1) as to gain multiple competencies and skills that may be combined for an optimised digital competency acquisition beyond rhythm-based teaching.

This report presented the 7 themes of rhythm-based teaching competencies with the use of technology along with the progression level used to assess teachers' digital competencies and skills particularly for rhythm-based teaching. A progression model has been developed mapping different progression levels to the CEFR framework and to the six learning types. As such we have mapped the 7 themes of rhythm-based teaching to the six progression levels and we have described the type of competence that may be discerned based on a particular progression level. To elicit teachers' experiences of using the DigiRhythmCompTeach a usability study has been conducted where mainly teachers perceived that digital skills for rhythm-based teaching could be placed around acquiring information, subject content delivery and ways of interacting with teachers, content, peers and technology across the 7 themes of rhythm-based teaching. The report proposed recomemendations on how digital competencies frameworks may be enhanced towards becoming more personalised and engaging and also in terms of skills and competencies most likely to be interesting to be developed for teachers that are engaged into rhythm-based teaching as a pedagogical strategy involving dance, music and rhythm as elements of practice.