TEACHER GUIDE: EMPOWERING TEACHERS WITH FLIPPED AND BLENDED LEARNING PEDAGOGY/METHODOLOGY FOR INNOVATION AND STUDENT-CENTERED EDUCATION

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Abstract

This paper presents a comprehensive teacher guide to empower educators with the knowledge, strategies, and tools to successfully implement flipped and blended learning pedagogy/methodology in their classrooms. The guide focuses on fostering innovation and creating student-centered education environments. Its goal is to provide practical guidance for teachers to effectively integrate flipped and blended learning approaches into their instructional practices. The guide introduces flipped and blended learning concepts, emphasizing their potential to revolutionize traditional teaching methods. Flipped learning encourages teachers to deliver content through pre-class activities, allowing students to engage with the material at their own pace. Blended learning combines face-to-face instruction with online components, providing flexibility and interactivity. The guide offers strategies for designing engaging pre-class activities to support teachers in implementing flipped learning. It emphasizes the creation of compelling video lectures supplemented with diverse resources that cater to different learning styles. The guide highlights the importance of aligning pre-class activities with learning objectives and fostering student autonomy. In addition, the guide explores instructional strategies for facilitating active learning and collaboration during in-class sessions. It suggests pedagogical approaches such as group discussions, problem-solving tasks, hands-on experiments, and project-based learning. These strategies foster critical thinking skills and student engagement. The guide encourages teachers to become facilitators, guiding students' exploration and supporting their learning journey. The guide also addresses the integration of technology into blended learning. It provides insights into selecting and utilizing online tools and platforms that enhance student engagement and interaction. Learning management systems, multimedia resources, virtual simulations, and discussion forums are presented as effective resources. The guide emphasizes aligning technology usage with learning objectives and available resources. Challenges in implementing flipped and blended learning are acknowledged in the guide.

Limited technological access, technical support, and time management are common obstacles. The guide provides recommendations for overcoming these challenges, including fostering collaboration among colleagues, seeking professional development opportunities, and leveraging available resources. Ongoing assessment and timely feedback are emphasized to monitor student progress and adjust instructional strategies. In conclusion, this teacher guide empowers educators with the pedagogy and methodology of flipped and blended learning. By embracing these approaches, teachers can foster innovation, engagement, and student-centered education. Integrating technology and student-centred instructional strategies prepares students for the demands of the modern world. This guide is valuable for educators seeking to enhance their teaching practices and create meaningful learning experiences for their students.

Keywords: Teacher Guide, Empowering Teachers, Flipped Learning, Blended Learning, Pedagogy, Methodology, Innovation Student-Centered Education.

1 INTRODUCTION

In recent years, the education sector has undergone a transformative shift, accelerated mainly by the closure of schools in 2019, which necessitated a swift adoption of digital tools for remote learning [2]. However, the subsequent 2020-2021 school year saw a more deliberate focus on how these tools could be pedagogically harnessed. Educators grappled with issues such as curriculum management, student motivation, assignments, and assessment in the digital realm [3]. This shift towards digital education prompted extensive training, the formation of practice communities, and peer support networks both within and outside schools. Even educators, initially resistant to digital tools, found themselves engaged in this reflection process, leading to a profound transition from traditional face-to-face to distance learning [2, 6]. However, questions persist regarding equitable student access, the long-term sustainability of distance learning, and the role of digital tools in fostering school community interaction beyond physical boundaries [5].

Amidst this transformation, innovative teaching methods like flipped and blended learning have emerged as frontrunners. According to the European Commission (2021), blended learning combines face-to-face teaching with distance learning, utilizing various digital and non-digital learning tools [2]. This approach has been crucial in helping secondary schools and teacher training systems adapt to pandemic conditions and future educational challenges. Blended learning, particularly the flipped classroom approach, offers a promising approach to engage all students, including those who require additional support [8].

Additionally, teachers across disciplines have embraced multimedia and interactive learning content to enrich their teaching. Factors such as rapid internet development, improved technological infrastructure in schools, digital educational repositories, and mass teacher training in technology usage have contributed to this trend [2, 6]. Teachers are increasingly integrating digital resources into their classrooms using external websites and self-created digital content. However, the key emphasis is on using technology with a techno-pedagogical approach, ensuring it enhances the learning process and engages students actively. Furthermore, the utilization of digital tools should not be limited to mere presentation; it should transform the learning experience, by making students part of knowledge creation process and not only a reciver of itBefore incorporating technology into lessons, educators should consider its added value compared to traditional teaching methods [6]. Interactive elements, such as questions, comments, and hyperlinks, should be leveraged to enhance the educational value of digital tools. The goal is to involve students in active learning and exploration, fostering creativity and meaningful engagement [7].

In conclusion, educational technology has enriched course content with multimedia resources and made learning more engaging and adaptable to various learning styles [3]. Students are encouraged to become digital content creators, developing various skills. The key is using digital tools when they add pedagogical value beyond replicating traditional practices [3, 6]. Transitioning from "teaching through the media" to "learning through the media" is essential, emphasizing the role of digital tools as environments for the learning process. Teachers can harness digital technologies to provide rich multimodal content, create engaging activities, and promote digital literacy, creativity, and social skills among students [1,4].

In this paper, we present the pilot procedure that was conducted in the context of the Ersamus+ project "Connect" (Upskilling of sChools' teachers to effectively support ONliNe EduCaTion). The project aimed to reinforce the ability of education and training institutions to provide high-quality, inclusive digital education. The pilot procedure, also known as a pilot study, is a small-scale preliminary investigation conducted to evaluate the feasibility and effectiveness of the flipped classroom on specific topics (Physics, Mathematics and Foreign languages). Overall, the pilot procedure is an important step in the research process that can help ensure the success of the flipped classroom approach at schools, aiming at:

- Strengthening teachers' digital skills and the skills to implement innovative educational practices, such as the flipped classroom.
- Enhancing teachers' capacity to develop educational scenarios based on innovative practices such as the flipped classroom but also based on appropriate digital interaction.
- Increasing collaboration between specialist teachers at the school level.
- Improving the learning process (increasing active participation, interactive interaction).

2 METHODOLOGY

The proposed methodology mainly concerns three actions:

1. Preparation: training, material study, ppts, LTTA
    1.1. Training: Teachers undergo training sessions to familiarize themselves with the new teaching methods, tools, or technologies to be implemented during the pilot application.
    1.2. Material Study: Teachers review relevant study materials, resources, and curriculum guidelines to align their teaching strategies with the educational objectives.
    1.3. Preparation of Teaching Materials: Develop PowerPoint presentations (PPTs), lesson plans, Learning, Teaching, and Assessment (LTTA) strategies, and other necessary teaching materials.
    1.4. Collaborative Planning: Teachers collaborate during meetings to plan and discuss the objectives, methodologies, and expectations for the pilot application.

2. Didactic transformation
    2.1. Configuration of Application Scenario: Teachers transform the planned teaching strategies into a coherent application scenario, ensuring alignment with the curriculum and educational goals.
    2.2. Implementation and Reflection Diary: Teachers maintain a diary where they record their experiences, challenges faced, and reflections on each teaching period during the pilot application.
3. Evaluation of the pilot application
    3.1. Recording Cooperation Meetings: Meetings among teachers and other stakeholders are recorded to capture collaborative efforts and discussions.
    3.2. Teacher's Teaching Plans: Detailed records of teaching plans, educational scenarios, planning sheets, and student worksheets are submitted. Any modifications or new plans are documented.
    3.3. Creation: Generate reports, documents, and any necessary materials required for the evaluation process.
    3.4. Reflective Dialogue:
        3.4.1. Cross-Observation: Teachers observe each other's classes, fostering a cross-observation environment for mutual learning and improvement.
        3.4.2. Reflective Dialogue: Engage in reflective dialogues where teachers and students discuss the recorded data, experiences, and outcomes. This promotes critical analysis and learning from the pilot application.

The pilot application concerns only a part of the daily teaching work of the teachers involved and is expected to differ significantly from it. It inevitably has the characteristics of a teaching intervention. Therefore, every teaching intervention must adopt a specific methodology for planning, implementing and evaluating the teaching practice. In this direction, the methodology proposed combines collaboration (collaborative planning, cross-observation, reflective dialogue).

This requires collecting and analyzing data from multiple sources to highlight the critical (weak or strong) features. In this direction, the data to be collected will come from the following evaluation and assessment actions:

1 Recording Cooperation Meetings: These encompass both supportive and educational group meetings, including those among educators within the school. If all parties involved agree, a tape recorder can be employed to capture these discussions.

2 Observation of Implementation and Reflection Diaries: Teachers are encouraged to maintain diaries for each phase of the pilot application. These diaries serve as valuable tools for self-assessment and reflection.

3 Recording Teaching Plans: Teachers submit their educational scenarios along with planning sheets and student worksheets. New data submission is necessary only if there are modifications or the creation of a new script. This step is essential as no pilot can be undertaken without a well-structured design script.

4 Maintenance of the Reflection Diary: Supporting staff are responsible for recording actions and gathering crucial data on both micro and macro levels. This comprehensive diary serves as a record of actions and insights.

5 Document Creation: Necessary documents, reports, and materials are generated to provide a comprehensive overview of the evaluation process.

6 Pre- and Post-Tests: Teachers and students are required to undergo assessments before and after the pilot implementation to gauge their experiences and learning outcomes. The creation of appropriate tests is essential.

7 Pilot Application Data Submission Report: Each partner school submits a comprehensive report detailing the pilot application's outcomes. This report includes the number of students who benefited. Notably, this submission process actively involves school supporters, ambassadors, and school principals.

8 Throughout the pilot application, teachers will maintain continuous monitoring of the implemented strategies and their impact on students' learning experiences, and be prepared to adapt the strategies based on the feedback and data collected during the pilot application. Flexibility is the key to refining the teaching methods. The insights gained from the pilot application will be useful for the long-term teaching strategies and curriculum development, ensuring the continuous improvement in the educational process.

2.1 Teachers' Preparation

The teachers' preparation process could be completed following the below sequence of steps:

1 Registering on the MOOC.

2 Enrolling on MOOC courses.

3 Studying the material on the MOOC.

4 Studying the material of the learning training.

5 Studying the guidelines for developing educational scenarios.

6 Studying the course-oriented scenarios uploaded to the project's website.

7 Develop a draft learning plan (for implementing a new or an existing scenario).

8 Discussing the draft learning plan with educators who teach the same didactic object within the school environment or outside the school environment.

9 Finding peer-reviewers.

10 Forming communities of practice.

11 Defining a minimum set of participants (teachers and students) aiming to test the delivery of a part of the courses of Language, Mathematics and Physics using the proposed approach for online education.

2.2 Piloting Phases

2.2.1 Phase 1

- Study the supportive material on MOOC and the project's website.
- Fill out the initial data and pre-test questionnaires (for teachers and students) using a Google Form.
- Find peer reviewers (educators who will evaluate your scenario before or during implementation).
- Find coordinators or supervisors.
- Create communities of practice.

2.2.2 Phase 2

- Implement the Scenario
- Fill out the post-test questionnaires (for teachers and students).
- Complete the reflection diary.
- Fill out the "Good practice" Template (1 practice per course).

2.2.3 Phase 3

- Complete a final report in the context of which the entire experience of Piloting should be presented.

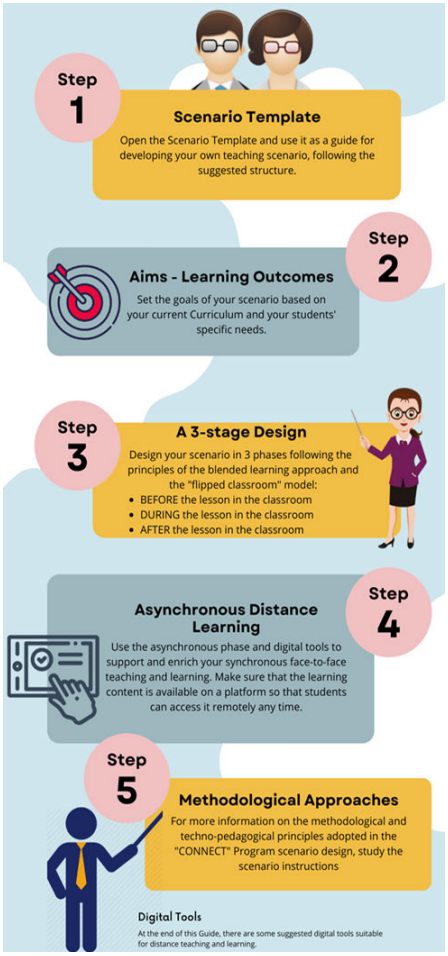

Figure 1. Blended Learning and Flipped Classroom

3 RESULTS

3.1 Feedback and Reports

3.1.1 For Teachers

3.1.1.1 Pre-pilot teachers' evaluation phase

The survey aims to evaluate the teachers' pre-pilot experience in flipped classrooms to obtain the students' specific learning outcomes (knowledge, skills and competencies), foster students' active participation in learning activities, and improve the whole educational process. (link)

3.1.1.2 Initial Data Collection.

Initial Data Collection will be completed before the pilot implementation to mark some initial information from the teachers, especially as a token of preliminary or informal data. The completeness of initial data is identified before analyzing any given dataset. (link)

3.1.1.3 Post-pilot teachers' evaluation phase

The survey aims to evaluate the degree to which the desired objectives have been achieved from the teacher's perspective via students' active participation in learning activities and improving the whole educational process. (link)

3.1.1.4 Reflection Diary

The reflection diary is an "account" of the teacher's work in progress, but more essentially an opportunity for reflection on the teaching experience, providing a means of engaging critically and analytically with flipped classroom content (link)

3.1.2 For Students

3.1.2.1 Pre-pilot students' evaluation phase

The purpose of the survey is to evaluate the students' pre-pilot experience in flipped classrooms to obtain the students' specific learning outcomes (knowledge, skills and competencies) via learning activities and the whole educational process. (link)

3.1.2.2 Post-pilot students' evaluation phase

The purpose of the survey is to evaluate the degree to which the desired objectives have been achieved from the student's perspective through their participation in learning activities and improving their educational process. (link)

3.2 Evaluation

The reports will be on how the implementation was conducted, the difficulties encountered, the impact on students and other details that may be in the teacher's reflection diary. Sending completed questionnaires regarding:

- Degree of cooperation between teachers.
- Degree of collaboration between teachers and students.
- Degree of administrative support.
- Degree of active participation and interactive interaction.
- Degree of effective script implementation on innovative practices such as flipped classrooms (reflection diary).
- Degree of use of peer observation and critical friends.
- Degree of benefit from the training (MOOCs) (whether the training helped in the piloting).
- Degree of benefit from LTTA (how much it helped the pilot).
- The overall degree of achievement of the objectives of the whole project.

4 CONCLUSIONS

In a rapidly changing educational landscape, educators are embracing a multitude of innovative practices to enhance teaching and learning. One such transformative journey begins with adopting the flipped classroom approach a practice gaining momentum in recent years. This approach not only flips the traditional teaching paradigm but also flips the way teachers perceive their roles in the classroom. As educators delve into this new frontier, they find themselves on a path of profound transformation and enrichment, and they they should embrace it.

First, familiarity with the flipped classroom concept is a cornerstone of this educational adventure. Teachers enter uncharted territory, where students engage with instructional content before class, freeing valuable classroom time for interactive discussions and activities. As they navigate this uncharted terrain, educators gain invaluable experience developing educational scenarios rooted in innovative practices. They craft lessons that stimulate curiosity, critical thinking, and deeper understanding, fostering an environment where learning thrives.

In this journey, collaboration becomes the glue that binds speciality teachers at the school level. Multidisciplinary comes together to share insights, strategies, and resources. The once-isolated classroom becomes a hub of collective expertise, thanks to the utilization of peer observation and evaluation. Teachers invite colleagues to their classrooms, welcoming constructive feedback and continuous improvement.

Communities of practice emerge organically as teachers recognize the value of collective wisdom. These communities become platforms for sharing experiences, troubleshooting challenges, and co-creating effective teaching strategies. Reflection too takes center stage, serving as a powerful tool for teacher self-improvement. Educators pause to ponder, analyze, and refine their teaching practices, ensuring each lesson is a step closer to excellence.

As this educational journey unfolds, it also strongly emphasises strengthening and empowering teachers' digital skills. Educators in an increasingly digital world acquire proficiency in leveraging technology to enhance instruction. They become adept at using digital tools to create engaging content, communicate with students, and facilitate remote learning when necessary.

Ultimately, the benefits of this journey extend beyond the classroom, touching students' lives. Students actively participate in their learning journey, as the flipped classroom approach empowers them to take ownership of their education. The learning process undergoes a significant transformation with increased engagement and more effective teaching practices. It becomes dynamic, adaptive, and tailored to meet the diverse needs of learners.

In this paper, we presented a pilot procedure that was implemented in the “Connect” project. The procedure consisted of three phases to enhance the capacity of education and training institutions to deliver inclusive and high-quality served as a preliminary investigation. Its aim is on assessing the feasibility and effectiveness of implementing the flipped classroom approach in specific subjects, including Physics, Mathematics, and Foreign languages. The significance of this pilot procedure lies in its pivotal role within the research process, contributing to the successful integration of the flipped classroom approach in schools. The objectives of this pilot study encompassed various crucial aspects, including the strengthening of teachers' digital skills and their ability to implement innovative educational practices, such as the flipped classroom. Furthermore, it aimed to empower educators to develop educational scenarios grounded in innovative practices and appropriate digital interactions, fostering collaboration among specialized teachers at the school level, and ultimately improving the learning process by promoting active participation and interactive engagement.

The value of this pilot procedure is multifaceted and far-reaching. Firstly, it addresses the pressing need to enhance the capacity of education and training institutions to provide inclusive and high-quality education. Evaluating the possibility and effectiveness of introducing the flipped classroom approach in subjects such as Physics, Mathematics, and Foreign languages creates an opportunity for potential changes in teaching approaches. This initial research study has a crucial role as it contributes to the successful adoption of the flipped classroom method in schools, promoting innovation and enhancing educational techniques. Additionally, it enables educators by enhancing their digital skills, fostering collaboration among specialized instructors, and ultimately establishing a more captivating and participatory learning atmosphere. In summary, this preliminary process offers a multitude of advantages, facilitating progress and transformation for both educators and students, serving as a valuable catalyst for positive educational reform.

In conclusion, adopting innovative practices like the flipped classroom opens the door to a world of benefits for educators and students. Educators embark on a journey of growth and transformation through familiarization, collaboration, reflection, and the utilization of digital tools. This journey improves the learning process and sets the stage for a more empowered and engaged educational community.

ACKNOWLEDGEMENTS

We extend our heartfelt gratitude to all contributors, collaborators, and stakeholders involved in the meticulous crafting of this scientific paper. Foremost, our warm appreciation goes to the co-editors and project partners of the *Connect* Project. Their diverse expertise, insights, and unwavering commitment have been instrumental in shaping the nuances and depth of this research.

Special acknowledgment is due to the Erasmus+ program of the European Commission for their financial support. This work was funded under the grant 2020-1-EL01-KA226-SCH-094578 titled " Upskilling of sChools’ teachers to effectively support ONliNe EduCaTion" (*CONNECT*). Their commitment to fostering research in adult education and digital competences is invaluable, and this paper stands as testament to the potential of such collaborations

REFERENCES

[1] Liu, L., Chen, L. T., & Pugh, K. (2022). Online teaching and learning under COVID-19: Challenges and opportunities. Computers in the Schools, 38(4), 249-255.

[2] European Commission. (2021). Education and Training Monitor 2021. European Union. [https://op.europa.eu/en/publication-detail/-/publication/e8468bfa-2504-11ec-b56f-01aa75ed71a1]

[3] Qureshi, M. I., Khan, N., Raza, H., Imran, A., & Ismail, F. (2021). Digital technologies in education 4.0. Does it enhance the effectiveness of learning?.

[4] Hoi, S. C., Sahoo, D., Lu, J., & Zhao, P. (2021). Online learning: A comprehensive survey. Neurocomputing, 459, 249-289.

[5] Al-Rahmi, W. M., Alzahrani, A. I., Yahaya, N., Alalwan, N., & Kamin, Y. B. (2020). Digital communication: Information and communication technology (ICT) usage for education sustainability. Sustainability, 12(12), 5052.

[6] Smith, J., Brown, A., & Jones, C. (2020). Digital Technologies in Education: Factors Contributing to the Use of Digital Technologies by Teachers in Education. International Journal of Education and Development using Information and Communication Technology, 16(2). [https://ijedict.dec.uwi.edu/viewarticle.php?id=2662]

[7] Smith, M., & Gurton, P. (2020). Flipping the classroom in teacher education. Flipped Classrooms with Diverse Learners: International Perspectives, 221-238.

[8] Rasheed, R. A., Kamsin, A., & Abdullah, N. A. (2020). Challenges in the online component of blended learning: A systematic review. Computers & Education, 144, 103701.