Digital Facilitator Trainer Role

DIGITAL TOOLS AND BEST PRACTICES

IN THE USE OF GAMIFICATION, DATA ANALYTICS AND ARTIFICIAL INTELLIGENCE IN EDUCATION

TRANSNATIONAL RESEARCH REPORT

Cooperation for innovation and exchange of good practices
VET – Vocational Education and Training

DIGITAL FACILITATOR TRAINER ROLE
DigiFacT

RESEARCH REPORT TÜRKİYE

Information

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Introduction to DigiFacT

The use of digital content in education worldwide was relatively uncommon before the crisis started. Only 20% of countries had digital learning resources in teaching, but only in some schools. A mere 10 per cent of countries had more robust digital learning capabilities offering some of the educational materials available outside of school.

According to the World Bank, no country has a universal digital curriculum for teaching and learning. These numbers paint a picture of the efforts that governments and schools had to take to rapidly move to distance learning to ensure continuity of learning. The other part of the equation is how educational institutions are equipped for online learning, and how well teachers are prepared for, and engaged in online teaching. Teachers need to quickly adjust their teaching methods and learning expectations. Is in this context when the figure of the digital facilitator trainer (DFT)became necessary.

We detected that in some countries the educational entities took charge of the demand for training in the use of virtual classrooms and telematic media, the use of Artificial Intelligence (AI), gamification, and data analysis for improvement of educational services. During Pandemic, AI became an instrument of measurement parameters, that we didn´t pay attention before, for instance, a good example in Spain was the final university examinations included new AI tools to avoid cheating, following up and monitoring any movement during the test time.

Gamification is also considered by all the VET community as an efficient tool but never before the standard of a good training course will be depend on the inclusion of some game, quiz or another tool prepare to engage participants in the online training. The quality of the gamification is improving year by year and now is especially important to be managed by the DFT.

Finally, we included Analytics, since from the consortia we detected the gap pre-existent in the use of data to improve the leaning models. Since the online was a fact during this period of crisis, the needs changed and move to improve this methodology. On the other hand, by implementing systematized data analysis, we facilitate the standardization of the tutoring protocol that defines the pedagogical methodology used.

The objectives of this project are:

- Development of a new methodology according to the recently needs in VET education

- Combining the 3 countries expertise to face new challenges in online VET education.

- Creating an innovative new figure, a DFT, with digital pedagogical skills and knowledge enough to be the trainer of trainers as an expert in AI, gamification and analytics

- Developing and testing different training courses to be a DFT in delivering professional development for VET teachers and trainers, according to their own local reality

- Fostering innovative learning opportunities and provide learning materials for professional development for VET teachers and trainers

- Building high-quality digital contents: digital open repository and best practice exemplars of using technology for teaching and training in VET in school and workplace settings

- Development of a Digital Community in the use of technology for digital training in VET in Europe The direct target groups of this project are: VET educators interested in improving their digital skills in AI, gamification and data analysis. They need to add to their toolbox of non-formal education methods using digital resources in EN and own languages (TR, RO, ES). The few existing resources are mainly in English, rarely accompanied by lesson plans to support their implementation.

The indirect target groups are young people between the ages 18-29 who need new ways of learning. We will provide the new knowledge, skills and attitudes, which in turn can contribute to their employability and improve their social inclusion prospects. The second target groups are youth organizations, institutes, VET centres, NGO´s, foundations and other non-profit organizations collaborating with youth, private companies. They need to harness the potential that digitalization represents to prepare youth for a society immersed in technology.

This project should be run internationally because the partner countries also have the same objectives for the same target groups in their countries. And the outputs of this project can be used internationally because many countries are facing the same problems in the digitalization in education. With the sudden emerge of Covid-19 the world face online systems as a must and trying to manage this period by doing their best and in cooperation and collaboration with the countries Exchanging their best practices.

This project is in line with European initiatives as the Framework of Key competences for lifelong learning and the European Framework for digital competences. Despite of all efforts made by public and private actors; a large mass of European trainers realized during the Pandemic crisis that exists a lack of AI, gamification and analytics skills in the VET trainer sector.

We will encourage and foster cross-discipline learning, partnerships between education, training and learning actors. The project will increase the knowledge that VET entities, teachers and trainers and stakeholders have about the European frameworks. Participants will also have an easy way to certify their digital competences (open badge) and will also be the digital trainer of trainers by offering an Open Digital Community as an innovative solution in VET, in line with European policies.

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Best Practices of using AI, gamification, and data analysis in digital education

Digitalization in Turkey started in 2003. Since 2010, especially e-government applications; all public institutions, all universities and all municipalities have been digitised. In this way, all services are done online and all transactions are recorded. Accordingly, the number of services provided is increasing day by day and new solutions are integrated into the systems.

However digitalization in education in Türkiye started in 2007 with the activation of the MEBBIS system.

MEBBİS[1] (Ministry of National Education Information Systems is a school management information system web software that was launched by the Republic of Turkey Ministry of National Education in January 2007. It is a system that includes the entire process from the registration of a student to school until his/her graduation. It is developed by the Information Processing Department and covers all electronic services offered by the Ministry of National Education.

In the e-school system, student registration, transfer procedures, grade entries, absenteeism procedures, exam information, application and preference processes for centrally held exams (LGS, AYT, TYT, etc.), document processes (appreciation, thanks, honor, etc.), weekly course program entries, received documents, e-score Card, branch written averages, announcements and information entries through many modules.

Apart from the e-school module, there is the e-school Parent Information System (e-school VBS) opened for parents to monitor the school status of the students. In this system, students' absences, course schedule, behavior grades, exam dates, announcements made by the school, entrance documents of central exams or preference results can be followed by answering a few security questions after entering the Identity Number and school number through this system.

Many people who have a role in education thanks to MEBBİS teacher input; teachers, principals, administratives staff, students and parents can log into the system. And for this just enter the address mebbis.meb.gov.tr. The system can be accessed after the specified user name, password, security code. Through this system, individuals can perform e-investment transactions, personnel transactions, public education transactions, e-school, e-mobile, open education institutions transactions, e-academy transactions, e-dormitory transactions, e-scholarship transactions and paperwork.

You can enter the Ministry of National Education Information Systems with your username and password. If you do not have a username and password, you cannot enter the system. You can obtain this information from the school administration where you are affiliated.

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[1] https://mebbis.meb.gov.tr/

Co-funded by the
Erasmus+ Programme
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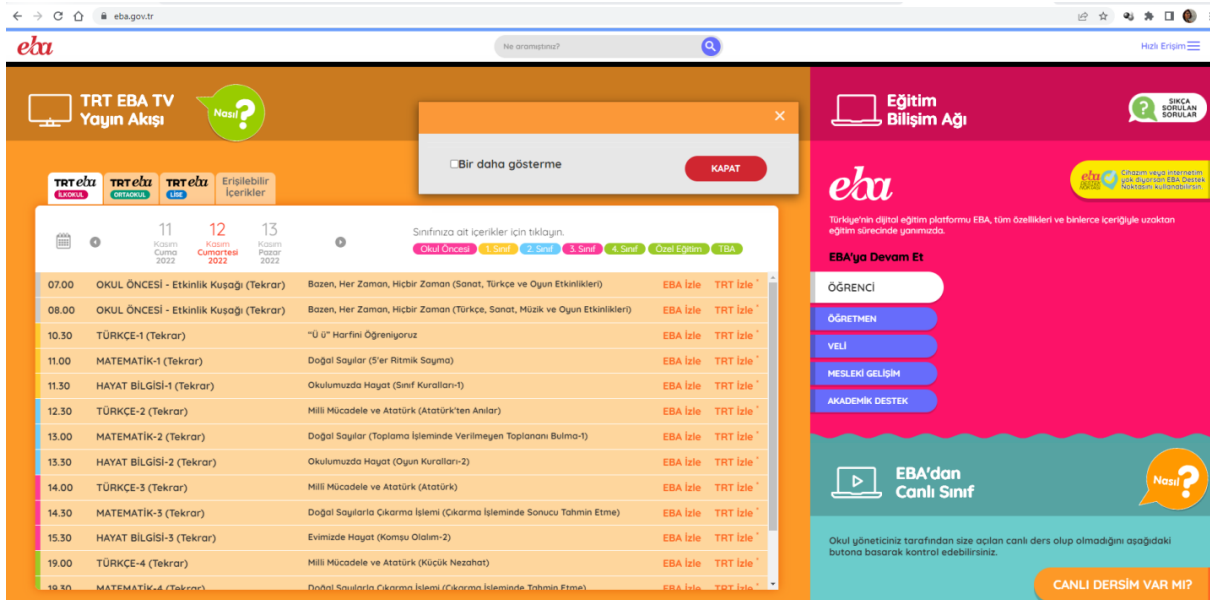
EBA: Eğitim Bilişim Ağı

EBA[2]: Eğitim Bilişim Ağı or EBA is an educational content network in Turkey, founded by the Ministry of National Education. The site is designed and run by the Innovation and Educational Technologies General Directorate, which is affiliated with the Ministry. The purpose of the network is the integration of technology to education when required, and the network gives online access to course materials to teachers and students under the FATIH project. Parents and teachers can also access EBA.

Educational material is uploaded to eba.gov.tr categorically and the contents have expanded throughout the years; especially during the Covid-19 period. In March 2020, when the Covid-19 pandemic started in Turkey TRT EBA TV was founded as a collaboration between TRT and EBA for primary, secondary and high schools on three different TV Channels to provide students education from home.

EBA: Eba is a social ethics platform prepared by the Ministry of National Education. It provides great support to education by giving free lessons to all students. It is the abbreviation of Education Information Network.

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[2] www.eba.gov.tr

DigiFacT - 2020-1-TR01-KA226-VET-097638
www.digifactproject.com

With this system, communication between teachers has become easier. EBA provides more convenience to students than it provides to teachers. A student entering EBA can access a very rich content. The student who enters EBA can easily access the notes, presentations and images shared by other students and can benefit from these materials as they wish.

The EBA system contains a whole world. EBA briefly;
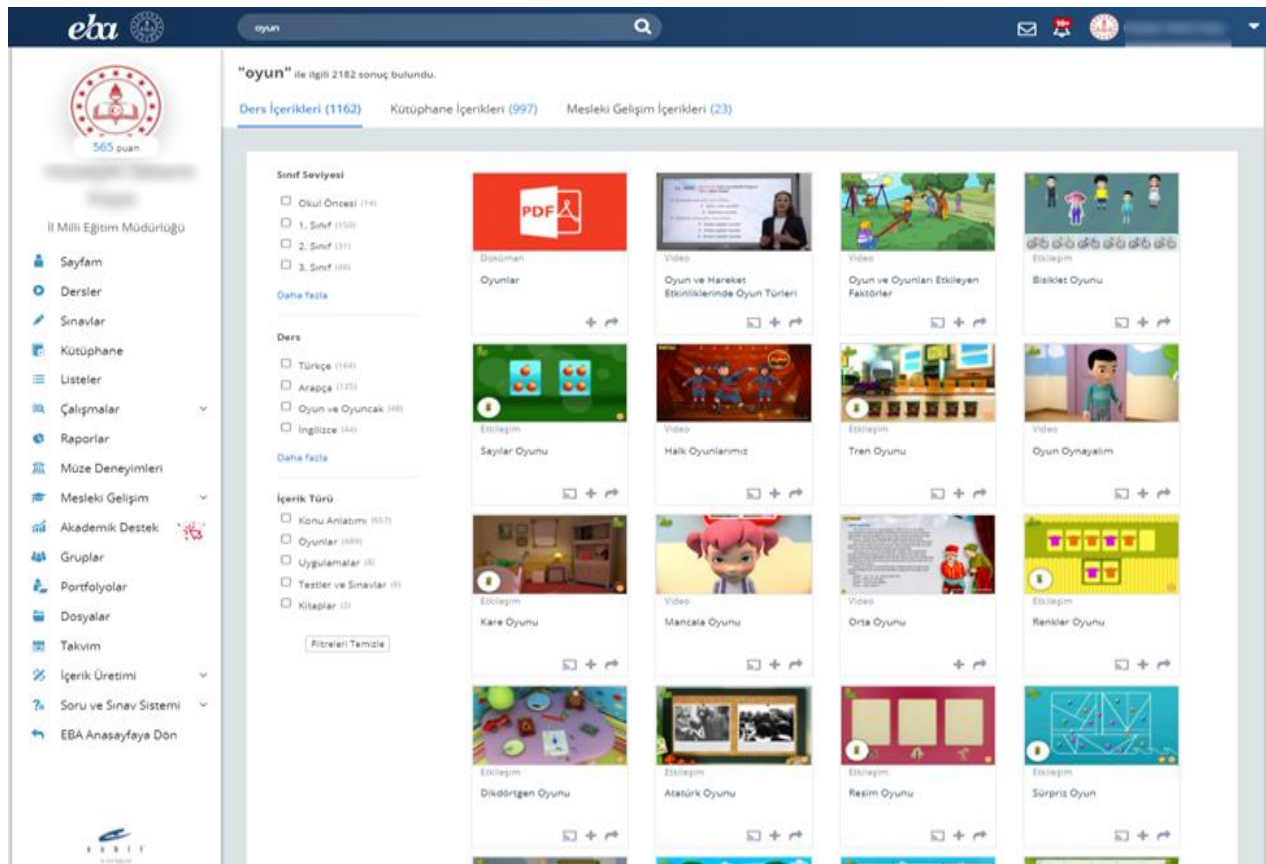
- To offer different, rich and educational content,
- To disseminate the informatics culture and to ensure that it is used in education,
- To respond to your content-related needs,
- To exchange information with the social network structure,
- To contribute to the lessons with its rich and ever-growing archive,
- To be able to reconstruct and produce knowledge from knowledge while learning,
- Including students with different learning styles (verbal, visual, numerical, social, individual, auditory learning),
- To bring all teachers together on a common ground and to enable them to direct education together,
- It is a social education platform designed to use technology as a tool, not an end.

EBA for teachers

It is designed so that they can collaborate effectively with their colleagues and share educational exchanges with their students. Our teachers; They can participate in educational discussions, share educational posts, send studies to their students, and follow the studies and upcoming events within the groups they create or follow in EBA Ders. In addition, they can contribute to the vision of the Ministry of National Education to export e-content to the whole world with the content they produce using the content development tools available here.

EBA for students

It has been designed so that they can do much more productive work and get paid for their work. With EBA Ders, our students can work, communicate and share with their classmates and teachers. In addition, our students can follow the homework and exercises sent by their teachers instantly from the calendar, and they can work on any subject they want whenever they want. They can continue to learn both at school and outside of school by sharing, voting and participating in activities at school.

Due to the pandemic, distance education has become mandatory. Thanks to EBA, which has the Distance Education feature, 5 million students instantly attended the lesson with their teachers and friends in the virtual classroom.

MEB assistant
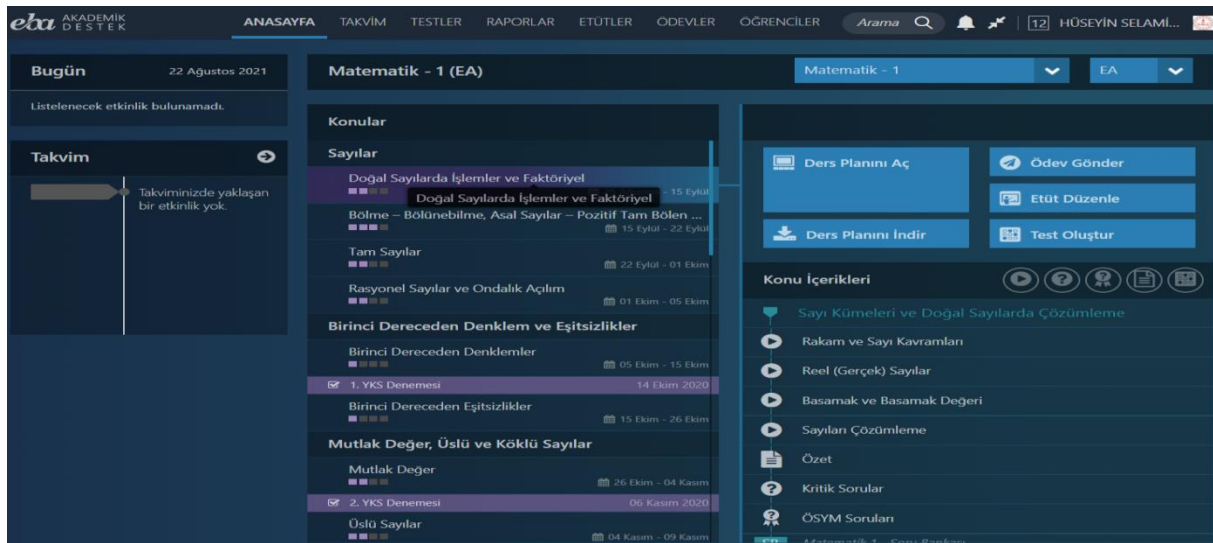
The Ministry of National Education launched the Meb Assistant program, which works with artificial intelligence, to assist visitors at http://www.meb.gov.tr.

EBA Assistant has been put into practice in EBA, the national online education network serving at https://eba.gov.tr/.

EBA academic support

"EBA, the digital education platform of the Ministry of National Education, has developed an

EBA Academic Support program for 11th and 12th grades."[3]

It takes the students directly to the smallest piece of information they need, without the need for them to re-work all the subjects from start to finish, by constantly monitoring the performances of the students, instantly identifying the subjects they are missing and suggesting the tests with the special missing correction lists for the students thanks to its smart suggestion system.

In the EBA Academic Support System, each student moves towards their university goals with the study strategy suggested by the artificial intelligence supported system. The system allows students to choose different strategies such as "work from scratch", "close the gaps" and "load on questions".

The Academic Support System analyses the student's practice exam questions and answers to test questions, the difficulty parameters of the questions and the order in which they are solved, and compares them with their goals in order to estimate how well the student understands a subject. As a result, the system decides whether to propose the next topic or not.

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[3] https://eba.gov.tr

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of the European Union

Tools and instruments for digital education

Digital tools and platforms are becoming more and more integral to our social and working lives. Digital learning increases students' access to education and knowledge that empowers students with a mindset and capabilities that sets them up for success in their present and future. Moreover digital tools have important advantages for making processes more consistent, secure, efficient, and effective. As institutions support staff and students across a broader range of geographies with a broader set of needs, the case for digital solutions only grows.

Communication, collaboration, and task management tool - Google Classroom,

Google Classroom, which is developed by Google, is a free blended learning that aims to simplify creating, distributing and grading assignments. The primary goal of Google Classroom is to streamline the process of sharing files between teachers and students.[4]

Google classroom integrates a variety of Google Applications for Education to manage students and teacher communication. Students can be invited to join a class through a private code or be imported automatically from a school domain. Each class creates a separate folder in the respective user's Google Drive, where the student can submit work to be graded by a teacher. Teachers can monitor each student's progress by reviewing revision history of a document, and being graded, teachers can return work along with comments and grades.

After joining a google class, students can get work from their teacher and communicate with their classmates. They can join a class with a class link sent by the teacher and a class code sent or told by the teacher. The teacher can see students' name, photo, and email address. Other students in the classes can view their name and photo. Guardians connected to students' account can view their name and photo. Google Workspace or domain administrators can view their name, photo, and email address.

Communication, collaboration, and task management tool –Microsoft Teams

Microsoft Teams is one of the ultimate messaging apps for organizations, institutions, schools—it is a workspace for real-time collaboration and communication, meetings, file and app sharing. All in one place open and accessible for everyone.[5] Microsoft Teams have four team types and these are:

- Class (teacher-led team featuring assignments)
- Professional Learning Community (PLC) (professional development, in-service training and peer-led educator working group)
- Staff (leader-led meetings for management, administration, etc.)
- Other types of meetings (clubs, study groups and extracurricular activities)

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[4] https://classroom.google.com
[5] https://www.microsoft.com/en-ww/microsoft-teams/teams-for-work?market=af

Media production – Emaze

Emaze is an online web-based presentation creator that can be used to build and edit presentations on any personal computer. Teachers can create their own quizzes, surveys, trainings, certifications, and forms with Emaze's automated wizard and watch the scoreboard to keep track of the engagement.[6]

Teachers can choose either from ready-made templates or create and personalize their own templates from scratch. You can insert unlimited videos, images and media so you can be sure about your content is the most engaging and you always get the results you need.

Media production – SlideShare

SlideShare is an online platform which allows you to upload your content in the form of PDFs, PowerPoint slides, videos, and other presentations. Presentations can be searched, viewed, read, shared and downloaded by anyone. With 60 million monthly visitors. SlideShare is the most popular presentation-sharing website in the world and it is a free-of-cost website. SlideShare automatically optimizes content for mobile phones, so you can be sure that your content is visible to all users. Slideshare content also ranks high in Google search results.[7]

Task management tool – Google Drive

Google Drive is a part of Google Workspace. It is a safe place to back up and access all your files from any device. You can easily invite others to view, edit or leave comments on any of your files or folders. Google accounts get 15 GB of storage, shared across Google Drive, Gmail and Google Photos.[8]

Google Drive is an all-encompassing software that helps teams work faster. As a task management tool, Google Drive can be used by students, groups and teams of all sizes to manage upcoming tasks, assign performance or project works, tasks, homeworks and works to team or group members, and collaborate within the platform.

In addition to being a great task management software and is used by thousands of groups and teams for project management, remote work, and overall team collaboration. To use Google Drive you simply sign up on the website and start your workspace within

Evaluation and Testing Tool – Quizzes

Quizzes encourage pupils' self-awareness of progress and self-assessment. By taking quizzes, pupils get instant feedback on their responses. And this can help them identify areas they need to develop themselves and highlight progress for them to be proud of. Quizizz is useful in multiple classroom situations. Quizizz assessments help students to recall facts and prepare themselves for traditional tests while the interactive lessons encourage more in-

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[6] www.emaze.com
[7] https://www.slideshare.net
[8] drive.google.com

depth learning.[9]

Collaborative tool – MindMeister

Mindmeister is an online mind mapping collaborative tool. It is a powerful technique that helps you to visualize your thoughts and share them with the others. Mindmeister is a web-based mind map maker that provides an infinite canvas for brainstorming, note taking, project planning and countless other creative tasks and it is easy to use and no download is required for it. You can also use MindMeister mobile app to realize your tasks wherever you are and whenever you want.[10]

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[9] https://quizizz.com
[10] https://www.mindmeister.com

Mapping the required skills and competences of educators

General digital skills and competences required

- To take the attention of the students to the topic of the lesson and increase their learning motivation

- To create original virtual content in their subject due to the level of their students

- To be able to adapt ready-made activities, presentations and modules into their lessons and share their products with others.

- To consider the level of their target group of students and choose tools that suit their level of learning and needs.

Communication tools and instruments such as Google Classroom and Microsoft Teams:

- To send emails, post to the stream, send private comments on assignments, and provide feedback on work.

- To have full control over student comments and posts.

- To communicate with parents through individual emails or through Classroom email summaries which include class announcements and due dates.

- To facilitate online discussions between students and create group projects within the Classroom. In addition, students can collaborate on Google Docs which have been shared by the teacher.

- Students will take their ownership in their learning through use of technology. Classroom offers numerous ways to make learning interactive and collaborative.

- To differentiate assignments, include videos and web pages into lessons, and create collaborative group assignments.

Media production – Emaze and SlideShare

- To prepare their own presentations or use ready-made ones and make their lessons more engaging

- To give tasks to the students to collaborate in teams or groups and improve their soft skills.

- To enable students use their smartphone apps in realizing school tasks

- To engage students with the teaching task and make them explore it.

Task management tool – Google Drive

- To get to know the tool and its possibilities before implementing it, making sure that it has the characteristics that better align with your audience and that you can explain its use.

- To use the tool both for your own courses organization and for students to manage their own individual and collaborative tasks and work.

- To actively use the tool and update its content, assuring that students will find the platform useful in a daily context.

- To store files in the cloud (on Google's servers), synchronize files across devices, and share files.

Evaluation and testing tool – Quizzes

- To help support active learning, facilitate team-building activities, and foster peer-to-peer learning.

- To save paper forms and time by using online evaluation forms and students can read questions on their devices and can read them at their own pace.

- To implement a clear criterion for evaluation and testing priorly communicated to students

- To create more attractive testing exercises through digital tools, including gamification elements like rankings and badges.

- To evaluate their participation, collaboration and attendance through apps like Quizziz, not simply results in numbers. To use analytics tools to keep track of students and act based on the data analyzed.

- To make students aware of their results and allow them to know their progress as well.

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Co-funded by the
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of the European Union

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Digital Facilitator Trainer Role

DIGITAL TOOLS AND BEST PRACTICES

IN THE USE OF GAMIFICATION, DATA ANALYTICS AND ARTIFICIAL INTELLIGENCE IN EDUCATION

NATIONAL RESEARCH REPORT ROMANIA

NATIONAL RESEARCH REPORT ROMANIA

Best practices of using AI, gamification, and data analysis in digital education

COVID-19 showed that progress in integrating technology into education continues to be slow. Most young people in Europe use the internet for social activities. Mobile Internet access has increased significantly in recent years, but the use of technology for educational purposes has not kept pace with these developments in Romania[11]. However, this desk research revealed that initiatives exist, mostly including gamification. Artificial Intelligence and data analysis are technological concepts that are not fully integrated in the digital education environment in our country.

Edition Microsoft Education Edition as a platform for learning through games

Minecraft Education Edition is a platform for building virtual lessons based on Minecraft - and the program is also available for teachers and educators in Romania! The perspective in Minecraft is a first-person based on gamification allowing players the freedom to explore and create worlds out of blocks.

Minecraft Education Edition gives students the opportunity to collaborate, build, solve problems in a virtual environment, in worlds created and monitored by teachers. Topics that can be tackled range from mathematics, to physics, history or even languages - it depends on the openness and imagination of the person building the virtual world with the modular blocks of Minecraft12.

When educational facilities or educators buy MinecraftEDU, students will have the option to download the game at home without having to buy their own version13. The full game costs US$5 per user per year to use, depending on school size and if qualifications for volume licensing are met. An entire classroom of up to 30 students can play in a world together with no separate server setup required. Students can work together in pairs or groups simply by joining their classmates' world. Individual licenses can be purchased for use in camps, clubs, and other organizations at a price of $12.00 User/Year. This purchase option is for any anyone that doesn't fit the criteria for a qualified educational organization.

As for educator, they may create a character to act as a guide for students in the game, giving instruction, providing more information, and also allowing educators to insert an active web link to additional references. They can use chalkboards to communicate learning goals, provide additional information and give explicit instructions within the game. Chalkboards come in three different sizes – (1×1), (2×1), and (2×3).

An important aspect of teaching with Minecraft is being able to collect evidence of learning

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[11] Strategia privind digitalizarea educației din România, 2020. Retrieved from
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[12] Bălan, I. 2016. *Minecraft Education vine si in Romania!*. Retrieved from: https://www.mobzine.ro/2016/11/minecraft-education-vine-si-in-romania/

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in the game, and being able to track student progression. The camera and portfolio features allow students to take screenshots of their work and document the development of their projects.

Lesson plans through Education Edition are available to download and are split between certain age groups and various subjects such as history, visual arts, and gaming. Additionally, educators can upload lesson plans that they have created for others to use from the main website14. It is a great platform for VET schools, as the possibilities of creating Minecraft worlds on various topics are almost infinite.

IziBAC as a mobile app to study for the Baccalaureate

IziBAC is a mobile app, available on iOS (Apple) and Android mobile phones, that aims to facilitate learning for the Baccalaureate exam and increase the pass rate. The iziBAC product uses the Octalysis gamification framework and psycho-pedagogy concepts to induce an optimal learning experience without anxiety or perception of intellectual effort15.

Through a quiz students will be able to simulate the exam and play with their peers at the same time. The questions will be organised into chapters from history, biology, maths, etc., so that they get a coherent overview of the subject. Furthermore, they will have access to video content on these topics to help them study for the exam in a gamified way, with incentives along the way16.

In addition to quizzes, they also have video or audio lessons that are given by collaborating teachers. And just as importantly, users help each other, it's called peer to peer learning. To help students develop, in addition to the Baccalaureate syllabus, they've added financial, civic and entrepreneurial education courses to the app17. Taking into consideration the openness of the educators and developers to introduce topics such as the ones mentioned before, VET schools can propose subjects that can be of national interest in the curricula of the app.

The developers are currently working on creating a learning community by adding a player versus player option and creating a forum where more advanced learners can offer explanations to those who need help18.

As with all online games, those who play IziBac receive "books", i.e. superpowers that encourage them to continue. There is a free and a premium version.

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[14] Minecraft Edu, n.d. Retrieved from https://minecraft.fandom.com/wiki/Education_Edition.

[15] Coşman, O. 2021. *iziBAC, startup-ul educațional care transformă lecțiile într-un joc mobil competitiv.* Retrieved from https://zoom.vodafone.ro/izibac-startup-ul-educational-care-transforma-lectiile-intr-un-joc-mobil-competitiv/.

[16] *Despre Izibac*, n.d. Retrieved from https://izibac.ro/#/.

[17] Archip, A. 2021. *Românii care au făcut aplicația mobilă IziBac arată cum „copiii care au învățat informația prin joc o rețin de două ori mai bine".* Retrieved from https://scoala9.ro/romanii-care-au-facut-aplicatia-mobila-izibac-arata-cum-copiii-care-au/763/

[18] Ion, R. 2020. *„Asta e de fapt magia din spatele iziBAC-ului. Înveți fără să-ți dai seama că înveți". Aplicația care îi ajută pe liceeni să se pregătească pentru Bac de pe telefonul mobil.* Retrieved from https://republica.ro/zasta-e-de-fapt-magia-din-spatele-izibac-ului-inveti-fara-sa-ti-dai-seama-ca-inveti-aplicatia-care-ii.

Easy Class - how data analysis is used as an aid for the teacher

Easyclass is a platform that enables teachers and educators to create interactive online classes where course materials can be stored and assignments can be managed easily. It allows educators to conduct quizzes and exams and also monitor due dates and grades – all in one place.

The Integrated Gradebook feature works in a way where once an assignment or quiz is posted to the digital class, a column will be added. Students' grades are then automatically entered in the Gradebook whenever teachers grade a particular assignment or quiz. Data analysis is used successfully to track students' progress, and to help the teacher manage assignments.

The MyFiles section is like a virtual library that users can access and update anytime and anywhere. It allows educators to organize, store, share, and manage all their documents right within their accounts.

The platform comes with a secured cloud-based SaaS with no advertisements, keeping privacy and safety at foreground. All content created within the online classes' platform can be viewed by only the class members[19].

Naradix - the platform where students can learn through games

Naradix is the initiative of Narada – an NGO from Romania focused on developing education. As they describe themselves – „we are the emergency ambulance of education in Romania"

As part of the 'Reaction for Education' initiative, a partnership between the Ministry of Education and Research and Narada - the NGO founder, launched the educational platform on 1 April 2020. At the launch, teenagers from across the country met online for an hour to learn about the things they are passionate about. From social media, to personal branding, personal development, technology, artificial intelligence or financial literacy, students had the opportunity to interact with top professionals[20]. NaradiX digital classes were attended by famous vloggers, business people or well-known trainers.

Naradix is a remedial education platform, a tool dedicated to students who, during their time in online school, have had difficulty actively participating in classes. According to data from the Ministry of Education and Research, in the school year 2020-2021, 259,000 children did not have access to online classes. The causes, though antithetical to the century we live in, are as real as it gets. Lack of necessary technology, connectivity or even electricity have "unfairly" disadvantaged too many children[21].

Students can be registered on by parents and teachers. They will discover an attractive and modern way of learning, allowing them to access it whenever they need to - for studying material or for further clarification from teachers. Students can set their own learning pace

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[19] SaaSworthy, n.d. *What is Easyclass ?.* Retrieved from https://www.saasworthy.com/product/easyclass.
[20] Edu.ro, 2020. *Se lansează Naradix - modul de clase digitale.* Retrieved from https://www.edu.ro/ministerul-educa%C8%9Biei-%C8%99i-cercet%C4%83rii-al%C4%83turi-de-narada-lanseaz%C4%83-un-modul-de-clase-digitale.
[21] Tabaracuamintiri.ro, 2021. *Hai pe NARADIX, platforma care îi ajută pe elevi să recupereze ce au pierdut în pandemie!* Retrieved from https://tarabacuamintiri.ro/platforma-naradix/.

and timetable. Most lessons are interactive, in the form of games or visual presentations, but there are also webinars scheduled for fixed times every week.

The NaradiX platform also supports live learning through weekly webinars. These are aimed at students in grades 0-8 and focus on subjects such as Romanian language, mathematics, history and geography. To ensure an enjoyable experience, places are limited, so students can sign up as places are available[22].

The students with the best results will see the fruit of their work in the form of prizes: books, balls, bikes, consoles, etc. The platform launched by Narada is also a facility for teachers, who will be able to exchange experiences with other teachers through webinars hosted by Naradix[23].

AeL – an alternative to Blackboard and Moodle

AEL is an integrated Learning and Content Management System developed by SIVECO Romania SA aimed to support professors/tutors, students, content editors, administrative staff and other stakeholders in the learning process. AEL is the backbone of the National Educational System (SEI) Program in Romania. It offers various types of educational content, such as multimedia interactive materials, interactive guides, exercises, simulations and tests[24].

AeL e-learning solution is based on international principles and standards that support modern education, being designed as complementary tool to classical teaching/learning methods. AeL offers support for all participants in the education process (Students, teachers, administrative personnel, parents). It can be used successfully in the teaching and learning process, testing and evaluation, educational content administration, monitoring the result of training and evaluation, education forecasting, trends and prognosis.

With AeL, the teacher controls the whole educational process, creating, adapting, monitoring the training and the students study at their own pace[25]. It is successfully used in universities, where Blackboard and Moodle are not present.

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[22] Edupedu.ro, 2021. *Profesorii pot înscrie elevii să recupereze cursurile pierdute în pandemie prin platforma gratuită de educație remedială Naradix, inițiată de Narada (P).* Retrieved from https://www.edupedu.ro/profesorii-pot-ajuta-elevii-sa-recupereze-cursurile-pierdute-in-pandemie-prin-platforma-gratuita-de-educatie-remediala-naradix-initiata-de-narada/.

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[24] Stirbu, I. 2006. *An integrated solution for content management and computer assisted training (AEL).* Retrieved from https://joinup.ec.europa.eu/collection/egovernment/document/integrated-solution-content-management-and-computer-assisted-training-ael.

[25] Dima, Lucian, et al. *(PDF) e-Learning Platforms in Romanian Higher Education*. https://www.researchgate.net/publication/49941751_E-LEARNING_PLATFORMS_IN_ROMANIAN_HIGHER_EDUCATION.

Tools and instruments for digital education

Following the research about different platforms based on gamification, AI and data analysis, we also discovered a wide variety of tools and instruments that aid the process of education in digital times. Some of them are known and used on a worldwide scale, some are just gaining terrain, but provide a great experience, for both students and teachers.

Testing tool - Kahoot

Kahoot! is a game-based learning platform that makes it easy to create, share and play learning games or trivia quizzes in minutes[26]. Kahoot! offers more than 40 million games already created that anyone can access, making it quick and easy to get started. Ideal for distance learning, when time and resources are at a premium.

At its most basic, Kahoot! offers a question and then optional multiple-choice answers. This can be accompanied with rich media such as images and videos to add more interactivity.

While Kahoot! can be used in the classroom, it's ideal for remote learning use. It's possible for teachers to set a quiz and wait to see the scores as students complete it. Or they can carry out a live hosted quiz using to be there as students are working through the challenges[27].

How it works? Kahoots are best played in a group setting. To join a game, you need a unique PIN. If you're the game host, you need a big screen. Players answer on their own devices, while questions are displayed on a shared screen. In addition to live games, you can also send Kahoot challenges for players to complete at their own pace – for example, for homework or remote training.

In Romanian, across schools and universities, Kahoot is a very widely used tool.

Communication tool - Discord

Discord is a free chat platform. It allows you to create spaces (called servers) and contact individuals through private chats. Within servers, you can create topic-specific channels that function like chat rooms.

Servers can be used as classrooms, and channels can allow teachers to organise lessons, homework, or study groups. In the text channels, anyone can post messages and upload files and images. In voice channels, teachers can deliver classes with Go Live or arrange office hours.

Therefore, Discord prioritises both text and voice, which makes the experience more engaging as it allows students to choose the communication channel they are more comfortable with. The downside is that, if a lot of new information is shared at the same time, the chat can get busy, and it can be hard for students to keep up with the

[26] Kahoot.com, n.d., *What Is Kahot.* Retrieved from https://kahoot.com/what-is-kahoot/
[27] Edwards, L., 2021. *What is Kahoot! and How Does it Work for Teachers?.* Retrieved from https://www.techlearning.com/how-to/what-is-kahoot-and-how-does-it-work-for-teachers

conversation[28].

Because it is very popular among gamers, Discord is mostly used for students when collaborating in the creation of educational projects.

Media Production tool - Canva

Canva is an online design tool with templates that helps you create multimedia presentations, posters, and other visual documents. The platform allows students to create their own accounts and work in group projects. Each student can modify the shared design and suggest changes.

With the templates, teachers can easily create certificates, charts and graphs, Venn diagrams, or even magazines. Canva allows information to be displayed in a clear and visual way, which can help students engage and better understand the content of the classes[29].

Canva offers both free and paid versions. If students provide proof of their enrolment, they can access the paid version for free, which is why it is so popular.

Task Management tool - Trello

Trello is a free, card-based, project management tool. In Trello, teachers can create boards to organise teams and projects. Each board is made out of different columns that contain cards with checklists, due dates, links and other media. Cards can be dragged from one column to another to track the progress of a task.

Also, Trello is collaborative. Teachers can invite students to the different boards where they can work together. Students can assign each other tasks, communicate back and forth, and move tasks to the "Done" list. Ultimately, with Trello, students can control the whole evolution of their project, outlining and tracking the steps needed to its completion[30].

Collaboration tool - Padlet

Padlet is a tool with which users can create a single or multiple walls that are able to house all the posts that they want to be shared. From videos and images to documents and audio, it is literally a blank slate. It's collaborative, which means both teachers and students can work on it at the same time.

The teacher can be the moderator and she/he can set the board as public, open to everyone, or with a password. From an educational point of view, the teacher can invite members through the e-mail, which makes it ideally for student education.

Once up and running, it's possible to post an update with the identity, or anonymously. Teachers start off by creating an account on Padlet, or via the iOS or Android app. Then they can make their first board to share using a link or QR code. These are the 2 options out of

[28] Delfino, D., Dean G., 2021. *What is Discord? A guide to the popular group-chatting app.* Retrieved from https://www.businessinsider.com/what-is-discord.
[29] Demarest, A., 2020. *What is Canva? A guide to the graphic design platform's features and capabilities.* Retrieved from https://www.businessinsider.com/what-is-canva.
[30] Trello, n.d. *What is Trello?.* Retrieved from https://help.trello.com/article/708-what-is-trello.

many both teachers and students have at hand[31].

Padlet is a frequently used tool by the Erasmus+ National Agency during trainings.

Communication tool - Zoom

The Zoom app gained great popularity during the coronavirus pandemic and is used by millions of people around the world who work from home. Zoom is also one of the most used programs by students and teachers, who have to take their courses online.

Zoom allows group video calls, chat, teacher screen sharing and the use of an interactive virtual whiteboard. The app can be used to communicate with both students and other teachers. The teacher has to create an account in order to initiate a discussion, but this is not compulsory for students. To do this, the teacher must have a computer, laptop, tablet or smartphone and an email address. Students only need a device to connect to the internet.

The app has four versions. The free Basic version allows the user who opens the videoconference (called the host) to invite up to 100 participants. They do not need to create an account. However, time for discussions is limited: up to 40 minutes. If only two people participate in the conference call - the initiator and one invitee - then there is no limit to the amount of time the call can be held[32].

The advantage of paid subscriptions is that video conferences can be recorded and stored on a cloud server. The Pro subscription requires a single host to pay $14.99 per month. In contrast, the Business subscription requires 10 hosts to pay $19.99 per month, and the Enterprise subscription requires 50 hosts to pay $19.99 per month.

Many schools in Romania, including VET schools, rely on Zoom for online classes.

All in one - Google Workspace for Education

Google Workspace for Education is a set of Google tools and services that are tailored for schools and homeschools to collaborate, streamline instruction, and keep learning safe. Google Workspace for Education includes all the products teachers and students already use, like Classroom, Meet, Gmail, Calendar, Drive, Docs, Sheets, Slides and many more. More than 170 million students and educators worldwide rely on this suite of tools.

Google Workspace for Education offers multiple options to meet teachers' and students' needs:

- Google Workspace for Education Fundamentals— access to Classroom, Google Meet, Google Docs, Google Forms, and Google Chat.

- Google Workspace for Education Standard gives teachers and students same tools as Education Fundamentals but with advanced security features and enhanced administration controls.

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[31] Edwards, L., 2020. *What is Padlet and How Does It Work for Teachers and Students?.* Retrieved from https://www.techlearning.com/how-to/what-is-padlet-and-how-does-it-work-for-teachers-and-students.

[32] Alba24.ro, 2020. *Aplicația Zoom: Ce este, cum funcționează și cum poate fi folosită pentru școala online. Scurt ghid al utilizatorului.* Retrieved from **https://alba24.ro/aplicatia-zoom-ce-este-cum-functioneaza-si-cum-poate-fi-folosita-pentru-scoala-online-scurt-ghid-al-utilizatorului-795829.html**.

- Teaching and Learning Upgrade— gives teachers the opportunity to deliver classes through video, with aid from Classroom, along with Education Fundamentals and Standard features.

- Google Workspace for Education Plus— includes features from all of the above, with added extra, such as possibility to download attendance list[33].

Google Workspace for Education Fundamentals is free for all qualifying institutions. Education Standard, the Teaching and Learning Upgrade, and Education Plus are paid editions.

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[33] Google.com, n.d. *Google Workspace for Education overview*. Retrieved from https://support.google.com/a/answer/7370133?hl=en.

Mapping the required skills and competences of educators

Kahoot

- To encourage students to interact with their phone in an educational manner;

- To apply in an effective way the taught content to the Kahoot structure;

- To foster creativity in oneself, but also in students, so the creation goes both ways.

Discord

- To be able to create an inclusive environment where students feel confident to use the camera and the microphone;

- To organise and manage servers in an effective way;

- To be able to use multiple tools at the same time (e.g. using Discord for communication and Padlet for collaboration).

Canva

- To be able to innovate the materials for the class by researching templates and coming up with new ones;

- To create presentation in a manner that are pleasant to look at and interact;

- To encourage students to be creative by using the same tool.

Trello

- To organise the class' schedule and tasks in an effective manner;

- To have a deep understanding of the tool before presenting it to the class;

- To encourage them to foster positive behaviors for time and task management.

Padlet

- To allow students to collaborate;

- To create a dynamic environment, where students can use the tool at maximum potential in the time given;

- To create a lesson plan where this tool is well used.

Google Space for Education

- To gain a deep understanding of the tool before training the students how to use it;

- To train the students the effectiveness of a good organisation plan, from Drive to Calendar;

- To understand privacy, how sharing screens/documents/Cc and Bcc from e-mail

work.

Zoom

- To understand how the tool works, and pass the information to the student;

- To create a lesson plan in such manner that is interactive and lasts 40 minutes, where there is the free option of Zoom used;

- To check any audio and video device used before the start of the class, and avoid teaching a lesson in a crowded environment.

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23. Alba24.ro, 2020. *Aplicația Zoom: Ce este, cum funcționează și cum poate fi folosită pentru școala online. Scurt ghid al utilizatorului.* Retrieved from https://alba24.ro/aplicatia-zoom-ce-este-cum-functioneaza-si-cum-poate-fi-folosita-pentru-scoala-online-scurt-ghid-al-utilizatorului-795829.html.

Digital
Facilitator
Trainer Role

DIGITAL TOOLS AND BEST PRACTICES

IN THE USE OF GAMIFICATION, DATA ANALYTICS AND ARTIFICIAL INTELLIGENCE IN EDUCATION

NATIONAL RESEARCH REPORT SPAIN

NATIONAL RESEARCH REPORT SPAIN

Best practices of using AI, gamification, and data analysis in digital education

Moodle as a tool for Learning Analytics and Gamification

Moodle has been one of the more popular online platforms for data analysis in education in Spain. Specifically, Moodle is a Virtual Learning Environment (VLE) that allows to continue or to completely develop teaching in a virtual learning environment. In this environment it is crucial to know the behaviour of students outside the classic classroom, to be able to successfully manage and guide the learning process of students.

As other similar platforms, Moodle offers a wide range of learning analytics plugins to be able to manage the learning paths of students by their teachers.

The multiple functions offered by Moodle in reference to learning analytics: Logs, Activity Report, Activity completion, Live logs, (Quiz) Statistics Report, (Course) Participation Report, Survey Activity, Course overview, Course completion status, Progress Bar, Events list, Activity results block, Configurable Reports (A list of contributed reports), (Gradebook) Overview, Ad-hoc database queries, Engagement Analytics, Course Dedication, Graph Stats, GISMO a graphical interactive student monitoring.[34]

Apart from this useful tool it is important to state that the process to a successful analysis does not involve only the platform, but also the user, in this case the teacher. Moodle will collect all the data and information about the learning activities of the students and show that information in a useful way (reports) for the teacher to be well inform and make decisions. This two first steps might be followed by acting on possible teaching-learning process deviations, act before these deviations take place based on the information gathered, and keep on refining the system so that any possible problem does not occur in the future.[35] It is necessary to take into account then, that together with the implementation of Moodle, it is necessary that teachers are trained in analytics ad ICTs in general, to create successful education practices or courses.

Regarding gamification, Moodle incorporates multiple useful tools that include customizable insignias or badges, the H5P tool to create gamify activities and visually more attractive content, templates to personalize classic games based on the curricula (Game), a reward system based on recollection of objects (Stash), a tool to install levels and rankings based on qualifications (Level Up; Ladder).[36] These five tools can be used to gamify any course and offer a playable and educational experience that results attractive and different to students.

Gradescope as an evaluation tool using AI

Gradescope is a tool that uses Artificial Intelligence to help teachers and educators grade

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[34] Moodle Documentation, 2021. *Learning Analytics, Moodle Plugins*

[35] Sánchez Poveda P., 2017 *Qualitative analysis of the use of Moodle and its learning analytics tools by teachers of IES La Melva in Elda*, pp. 29-37.

[36] Gutiérrez Fabián, 2021. *5 tools for gamification in Moodle*. Subitus

exams, tasks, and test much faster. Students can upload their tests to the platform and Gradescope would sort and aggregates the different answers for verification. The platform states that the time use for grading can me decrease in a 70 % or more the time spent by teachers.[37]

One of the perks of the platform is that its software provides teachers with a detailed analysis of their students' responses and in what areas or questions they failed, so they can provide individualized tutoring to each student or reteach entire concepts. In this way, Gradescope becomes a useful tool that allows to complement the figure of the educator but does not replace it.

During COVID-19 Turnitin, the company that created Gradescope, offered its services for free to Spanish universities. It was recorded than more than 65% of Spanish universities used Gradescope with satisfactory results. [38]

The platform main functions allow to develop the evaluation completely online or they can be developed on paper and later evaluate by Gradescope. In the completely online version, the platform allows to include a selection of questions that will be qualify automatically (multiple options and short answers) and questions that are manually graded by using Gradescope's default rubric. It also gives the option of submitting answers directly through the Gradescope web interface by students and set time limits for students to complete a test.

Secondly, if the tests are developed in paper the evaluation can be develop in two different ways, by priorly using a template with the questions and later upload a digitalize version of each sheet completed to the platform or by uploading a normal sheet and later the teacher will have to designate with area of the paper corresponds to each question.[39]

In conclusion, with some basic guiding on how to use the platform and create tests and courses, as well as to how explain students the way to upload content, teachers can learn to implement Gradescope and spent less time grading and more time developing other pedagogical content for students.

Linguaskill an examination tool using AI

During the global pandemic being able to continue to develop online exams became a challenge. In this situation innovative e-learning solution were essential. For the first time, those interested in accrediting their level of English with Cambridge during confinement were able to do so from home, by means of a computer-based test. Exams Andalucía, the largest examination centre in Europe in terms of the number of candidates taking the exam, made possible for anyone to accredit their level of English in 48 hours thanks to the Cambridge Assessment English multi-level test known as Linguaskill.[40]

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[37] Dell Technologies, 2021. *Artificial Intelligence: 4 Real Applications of AI in Education*.
[38] Elplural, 2020. *Turnitin helps universities adapt to the new Covid-19 pandemic scenario*.
[39] Turnitin blog, 2020. *Gradescope supports you in your urgent remote assessment needs*.

[40] Granada Hoy, 2020. EDUCATION. A breakthrough from Granada in artificial intelligence for invigilating virtual exams.

Linguaskill allows remote computer surveillance of the candidate taking the exam, using Artificial Intelligence techniques that monitor the candidate's gaze and movements. To do this, ID photographs are used to check that the candidate is the one taking the exam, which was possible through a webcam.

Linguaskill will assess the students in Reading and Listening, Writing and Speaking; and it will give the results in a short time, being possible to simply take one of the modules. In Spain the Linguaskill certification was recognised by the Conference of Rectors of Spanish Universities, the Association of Language Centres in Higher Education, and the Regional Government of Andalusia.[41]

SAKAI, a collaborative platform using Data Analytics[42]

Sakai is a popular LMS used internationally and in continuous developing, as it is Open Source. Sakai offers an extended catalogue of tools that cover all the necessities for online formation. In the case of Spain, the platform, popular worldwide between universities, is implemented in universities like Universidad Politécnica de Valencia, Universidad Complutense de Madrid, Universidad Católica San Antonio de Murcia, Universidad de Murcia, Universidad Pública de Navarra.[43]

The general functions of the platform include the creation of individual courses and their programs, creating announcements and keeping and agenda or planner of the activities, the possibility of doing tests and surveys, multiple communication canals, multiple content creating tools such as blogs, presentation tools, podcasts and more, and the data analytics tools that we will examine furtherly.

Sakai offers the essential data and statistics of the students' progress. In particular, the functions offer that can be easily understand and used by any educator with basic ICT skills are, getting information about every student activity in the platform, knowing which students participate less or more and we can complement the data analytics with giving tutoring sessions to students, also possible with the platform. The information can also be used as part of the evaluation process.

Blackboard Learn Platform, data analytics and gamification[44]

Blackboard Learn is one of the most popular platforms for e-learning in higher education worldwide and in Spain. It offers multiple learning tools for communication, collaboration, analytics and more. Regarding analytics Blackboard provides the possibility of tracking learners using reports, the retention centre, the performance dashboard, and other tools such as attendance, as well as keeping up to date on grading activities.

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[41] Luis @ KSE Academy, 2019. *Linguaskill: The new Cambridge exam 2020 Guide. KSE*Academy

[9] UVirtual. *Sakai for teachers and tutors*.

[43] Gómez Nicholls J. F., 2013. Interview, *Learning and media: LMS + ePortfolio + collaborative research system. America* learning Media.

[44] Blackboard Learn, eLearning Media. *Following of Statistics*.

Regarding the reports, the basic ones offer by Blackboard would include the activity of every user for each area of content, information of the users' activity in each course and group, individual information of each user in a particular course or in general. The retention centre is a tool that will allow teachers to keep special tracking of students that, because of some factor such us participation, grades, or attendance, are at risk.

Another interesting analytics tool offer by the platform is the possibility of aligning activities, test, or tasks with some general goals, related for example to general competencies we want to develop or institutional learning goals. After this, we will be provided with reports on how well the aligning between activities and goals has been implemented and how students have performed, if the goals have been reached or not.

Regarding the gamification elements, the platform has The Achievements tool, to reward students for their achievements such us successfully finishing a tasks or course level, good results in a test or for their high level of participation. The achievements tool can be adapted for each course and grade different aspects, they can be personalized by the teacher, and there can be tree different types: Course Completion, Milestone or Personalized. We can name our personalized achievements, add rules to explain students how to achieve them, and show these rewards visually through badges.

Tools and instruments for digital education

In addition to the already set methodology for the desk research, the method used for the collection of digital instruments was, elaborating a prior selection of tools and platforms with good reviews, used in digital education in Spain during the last years. This selection included 19 different items that were reduced to the following 10 based on three criteria: success (the tool/platform was commonly used, and it is considered popular based on positive posts and news published), accessibility (including a user friendly lay out, availability free of charges, and compatibility with multiple devices, i.e., PC, tablet, smartphone) and the offer of innovative and diverse functions.

Communication, collaboration, and task management tool - Edmodo

Edmodo is a social, educational, and free digital network that allows communication between students and teachers in a closed and private environment in the form of microblogging.[45]

One of the advantages of Edmodo in comparison with other similar tools is that students do not need to provide more personal data than their names to participate, the teacher will generate a code through which students can access that online space created.[46]

The functions allow in Edmodo are:

- "Create private groups with access limited to teachers, students, and parents

- To have a communication space between the different roles through messages and alerts.

- Share multimedia resources such as files, links, videos, etc.

- Incorporate the contents of our blogs.

- Conduct student surveys.

- Assign tasks to students and manage their grades.

- Manage a class calendar.

- Create communities where to group all teachers and students of the educational centre.

- To give parents access to the groups in which their children are assigned and to and have thepossibility to communicate with teachers.

- Award badges to students as prizes for their participation in the group.

- Manage shared files and resources through the library.

- Create subgroups to facilitate the management of work groups.

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[45] Videgaray Santiago, 2020. *Digital tools in education,* AoniaLearning.

[46] Alonso-García S., Morte-Toboso E., Almansa- Núñez S*. Social Media apply to education: EDMODO* Media in Education and ITC Magazine. 4 (2), 2015, E-ISSN: 2254-0059; pp.88-111.

Co-funded by the
Erasmus+ Programme
of the European Union

- Provide a public space to show the group's activity that the teacher deems appropriate. "[47]

Communication, collaboration, and task management tool - ClassDojo[48]

ClassDojo is a free app that works both on PC, mobile devices, and most platforms. Its function is to help educators implement methodological strategies based on gamification, cooperative work, flipped learning and project-based learning. It allows monitoring the progress and advances of students in those aspects chosen by the educator and structuring them in levels (class, group, student, etc.).

One of its most notable features is the "little monsters" avatar customizer, which has become popular in the educational world due to the aesthetics of its interface. It also provides resources, videos, and activities of its own that develop awareness, critical thinking, perseverance, and conscientiousness.

The service is available without the need to share phone numbers or contact details, and with "do not disturb" hours. Each class and its students are completely different from any other, ClassDojo allows you to customize and configure the initial environment, agreeing the point system with the students.

In terms of active management, the toolkit allows you to create random groups of students, display instructions for your activities, play background music, set an acoustic timer, a noise meter, display discussion questions and welcome messages, among other options. It also has a "random" function to ask random questions of the day and gives the possibility to create groups for specific tasks.

The platform is user friendly, and no initial training is required to use it properly. Nevertheless, depending on the interaction with the different tools it has and depending on the students and the skills we want to implement, more specific skills are needed to use the tool, which can be gained with experience.

Media production – Prezi

Prezi is an "interesting 2.0 online application to create multimedia presentations, maps or conceptual charts, which are very original, creative and very useful for any user".[49]

The tool offers several presentation features that allow you to insert videos, images, and audios. The element that probably distinguishes it from other similar tools are the zoom transitions, which allow you to focus on the topic in an original and attractive way. Prezi is an easy and useful tool, both from the point of view of preparing content to present concepts by the educator, and to offer students a useful presentation tool, which will allow them to improve their ability to synthesise, to improve their ICT skills, and to obtain a useful skill for their future work, that of knowing how to present their ideas in creative and attractive ways.

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[47] S*ocial Media apply to education: EDMODO* Media in Education and ITC Magazine, pp 88-111.

[48] Flores Paredes J. J., *ClassDojo, A classroom manager for monsters*, INTEF. 42, 2021, ISSN (web) 2695-4176

[49] Aula Virtual, 2013. *Perks of the use of Prezi in the classroom*.

Media production – Vimeo

Vimeo is a video-based social networking site. The site allows digital videos with high quality to be shared and stored, allowing users to comment on each other's pages. Users must be registered to upload videos, create their profile, use avatars, comment, and set up favourites' lists.[50]

The site is not specifically for education purposes, but some of its pedagogical uses are: the possibility of sharing videos both publicly and privately (i.e. for a close group of students), create tutorials that allow to present a subject or skills that educators are trying to teach; to share the projects made in vimeo by students and to present them is a creative way that also teaches students skills of video editing, video making and presentation.[51]

Storage Tool – WeTransfer

WeTransfer is an online platform in the cloud, designed to allow different types of files to be transferred free of charge to other users. It constitutes a simple way of sharing big documents in an easy and fast way. Users can send files up to 2 GB in the free version, with no need of any instalment in their devices, simply by being register in the platform.

Educators and students can send and receive their tasks, assignments, projects, and essays just by register with their email. Some of it advantages are that the app is simple and intuitive, so both students and educators can beneficiate from the platform even do they do not have an advance level of digital skills.[52]

Storage Tool – Pocket

The main function of Pocket is to save information offline that you later can review even if you do not have internet connection. It also allows to sort the information saved, and it can be access by any device.

Teachers and students can both benefit from this platform by organizing materials for the classroom or interesting websites' post, videos, or online articles about a specific subject, that can be visited later without connection to study or work on a project.

Pocket also allows to synchronize your different devices, so you would have the information saved in all of them, what can be useful if students or teachers do not have 24-hour access to the internet, so that they can save the information they are interested on when they do have access.

Tasks management tool- Tasks of MS Teams

The Tasks app provides a seamless task management experience in Microsoft Teams. Its differentiated feature is that Tasks integrates individual tasks with Microsoft To Do

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[50] Educativa, *Vimeo*

[51] Proyecto TSP, 2015. *Vimeo, Digital Resources*. Consejería de educación, universidades, cultura y deporte, Gobierno de Canarias.

[52] Aplicaciones de la informática a la educación, WeTransfer. Retrieved from: https://es.slideshare.net/marcoacostap79/grupo-6- wetransfer

technology and team tasks with Planner technology in one place. Users can access Tasks as an application on the left side of Teams and as a tab in a channel within individual teams. My Tasks and Shared Plans in Tasks allow users to view and manage all their individual and team tasks and prioritise their work. Tasks is available in Teams mobile, online, and desktop.

Therefore, Tasks is divided in two categories an each of them is synchronized with To do and Planner, so that if anything is added or modified in one of them it is also modified in Tasks and vice versa. Tasks becomes the ultimately organizer for MS Teams users, allowing to have every task in the same place, a very useful tool for teachers and students to manage different types of tasks, individual and different group tasks.

Evaluation and testing tool - Socrative

Socrative is an application born in 2010 with the aim of including smartphones into pedagogies. The main function of the app is to manage students' participation in classroom activities in real time. It helps to develop different type of exercises such us tests, evaluations, and projects. It can be used as a complement of the classroom to evaluate students and to engage them thanks to the inclusion ` the smart devices, or as a way of developing classes remotely, because the app also allows to create lessons.

It is available for free to download in multiple app stores, and on the web www.socrative.com with differentiated access for both, students, and educators, which allows it to adapt to the devices and resources of each person.

While the teacher needs to create an account on Socrative, students join classes, rooms, without having to create one. The teacher creates quizzes, Space Race (quiz with time) or Exit Ticket (quiz with ranking of results) and students respond in real time through their devices. The teacher can follow the results live and review them after, because the app will store them in the form of reports. The questions asked in the application are multiple choice, true or false and short questions.[53]

Socrative is a simple app, the skills needed by the educators are basic and it is very intuitive, so that you can learn by using it. Apart from the functions described, "with a little creativity and imagination, they can be used to motivate students, improve communication between classmates or encourage a spirit of self-learning. An example: they can be asked about a book they are reading: "Which character from the chapter you read yesterday would you like to have dinner with, explain your answer? Exercises like this initiate a collective discussion in the classroom and encourage students to share their ideas."[54]

Collaborative tool – Popplet

Popplet is an online tool that offers a digital platform to collaboratively create graphics - synchronously or asynchronously - and to organize our ideas, resources, images, etc. It has multiple functions as we can create virtual walls, concept maps, compilation of resources, timelines, etc. with a visually clear and attractive result. The possibility of creating mind

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[53] InspiraTICs, *Socrative, a tool for collaboration in the classroom*.
[54] Tejada Jenifer, 2021 *What is Socrative and how to start implementing it?* EDUCACIÓN 3.0

maps that integrate different representation systems stands out. In its application to the context of education, this tool helps students learn to think visually, allowing them to capture facts, thoughts and images and create relationships between them.[55] It is structured in the form of a desktop in which we can create bubbles, popplets, in which text, strokes, images, maps, videos and more can be introduced. [56]

Its use is simple and intuitive and allows collaborative work with students, allowing several users to work on the same project at the same time.

Collaborative and media production tool – EDpuzzle

EDpuzzle is an online platform that allows educators to create, transform and produce any video so that it can became a lesson presentation or tutorial for students. Teachers can choose between creating their own videos or modifying existing ones by editing them, adding audios, etc.

The platform has a lot of different functions to complement the teaching. It allows for educators to check which students have seen an explanatory video. The videos can also include questions or doubts sections at the end, allowing to implement the model of flipped classrooms easily, making the teaching experience collaborative.

EDpuzzle can be used without having to install the platform, by creating a link to send to students, but it is recommended to install it, so that they receive alerts when a task is post or modify.[57] It can also be synchronized with Google Classroom, being able to incorporate the platform through an already created and/or commonly used online classroom.

In general, EDpuzzle is a simple tool that can be adapted to the level of digitalizing of the educator, having the options of creating your own videos or modifying existing ones on the web. The platform counts with video tutorials about how it should be implemented.

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[55] Arrausi, J.; Ribosa Martínez, J.. «Driving maps: El uso de mapas mentales para orientar el Aprendizaje Basado en Proyectos a través del Design thinking». Gráfica, 2018, Vol. 6, n.º 11, pp. 25 and ss.

[56] Aplicacionesedurojo, 2020 Popplet

[57] Vilchez Jimenez B., Edpuzzle…and no more papers "Edpuzzle … y fuera fichas". INTEF, Nº43.

Mapping the required skills and competences of educators

General digital skills and competences required:[58]

- To actively develop one's own digital pedagogical practice, keep track of new tools and resources for your own continued formation in digital means.

- To consider your audiences, teaching objective and each course requirements before choosing a digital instrument and planning its implementation, especially when it's the first time you are implementing it.

- To modify and build on existing openly licensed resources where this is permitted (advance skill). To create or co-create new digital educational resources.

- To organize digital content and platforms in a comprehensive way for colleagues and learners.

- To protect sensitive digital content, apply privacy and copyright rules, to understand the use and creation of open licenses and open educational resources and their proper attribution.

- To use the available information, tutorial and guides when implementing a digital mean.

Communication tools and instruments such as Edmodo and ClassDojo:

- To use communication instruments to enhance organisational communication with learners and third parties. Implementing a communication strategy that considers rules for its use, appointments, events, tutoring etc.

- To enable students to use digital platforms as means of enhancing communication with the teacher and other students. To make students participant in improving organizational communication attending to their needs.

- To use communication platforms to foster students' collaboration and participation.

- To use digital communication tools to respond promptly to students' questions and doubts.

- To choose communication strategies and tools considering the specific audience, their needs, and limitations.

Collaboration tools and instruments such as Edmodo, Popplet, Classdojo and EDpuzzle:

- To allow students to collaborate during classes using these interactive flipped classroom tools.

- To create events and other activities to allow to create discussion and for students to collaborate and develop their critic thinking.

- To put to student's disposal collaborative tool to participate together in group activities ordiscusses doubts of individual tasks with the teacher and other learners.
- Create different activities to enhance collaboration through these tools and platform, i.e., create gamify experiences.

Evaluation and testing instruments such as Socrative:

- To implement a clear criterion for evaluation and testing priorly communicated to students
- To create more attractive testing exercise through digital tools, including gamification elements like rankings and badges.
- To evaluate their participation, collaboration and attendance thought apps like Socrative, not simply results in numbers. To used analytics tools to keep track of students and act based on those data analyzed.
- To make students aware of their results and allowed them to know their progress as well.

Storage tools and instruments such as Pocket and WeTransfer:

- To adjust the digital tools to students needs and limitations regarding their access to digitalresources.
- To allow them to have access to their work and their piers work in an innovative, digital andorganize way.
- To allow students and teach them in how to search information on the internet and how toorganize it and use it for their own learning and researching.

Media production instruments such as Vimeo and Prezi:

- To implement these interactive and more attractive ways of presenting information with the aim of engaging students.
- To teach students to use these instruments as well, to present their own work.

Task management tools like tasks of MS Teams:

- To get to know the tool and its possibilities before implementing it, making sure that it has the characteristics that better align with your audience and that you can explain its use.
- To use the tool both for your own courses organization and for students to manage their ownindividual and collaborative tasks and work.
- To actively use the tool and update its content, assuring that students will find the platformuseful in a daily context.

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Conclusions

Distance education, virtual classes and various web tools have been used efficiently by teachers especially since 2000s. With the sudden outbreak of Covid-19, face-to-face education has been disrupted in many countries as well as it is in the partner countries, Türkiye, Romania and Spain. During the Covid-19 pandemic period, being not able to organize or attend at face-to-face education has been challenging for teachers and students. Information technologies have been serving people for a long time, but Education Systems have not integrated the benefits of digitalized education into the system. And the pandemic has exposed this situation. It is necessary to benefit from the advantages and opportunities of Information Technologies, web tools in distance education, virtual education without the need for pandemics and natural disasters.

Even some teachers, parents or school staff faced difficulties in using virtual meeting tools and web tools in their courses; they get used to them in a short time and easily and learned how to deal with them in the digital world.

According to the national reports prepared by project partners from Türkiye, Spain and Romania we came to a conclusion that both teachers and students have been easily adapted to digital and distance teaching and using web tools in their courses. Teachers and students are active users of web tools in education in the field of Gamification, Data Analysis and AI. Teachers plan their lesson plans interactively and students engage in the courses via different types of tools. In interactive courses students learn from each other their collaborative, creative and communication skills improve.

Using Gamification tools, AI and data analysis tools are also used to improve second language learning. Students use different apps. VET teachers and VET students with improved language and digital skills are what education, business and industrial sector really need. From the national reports of the partner countries we assumed that VET teachers and students in project partner countries are almost on the right track what we objected in this project.

Co-funded by the
Erasmus+ Programme
of the European Union

About the partner organisations

In 1999, Femxa Formación S.L.U started its business trajectory as a training company, setting as its main objective to provide innovative training solutions to growing market needs and to anticipate future training needs arising in society. Since then, it developed consulting work specialising in Value Added training solutions, whose focus is on the development of projects of tailored training, aimed to solve the specific needs of customers more efficiently, which has allowed us to reach a landmark in the field of training. Our reason for being is to build training solutions that provide job opportunities for people and improve the competitiveness of organisations. In the last 20 years, we have trained more than 64.000 unemployed, 40.000 people aged over 45, 15.800 unemployed young people under 30.

TEAM4Excellence (T4E) is a Romanian association aiming to improve the quality of life through education, research and consulting activities. To address societal challenges, T4E provide learning opportunities and career advice for social inclusion, development and employability of people, and equip trainers with key competences and skills to foster personal as well as professional development. Within 30+ EU funded projects; the association produces and transfers innovation, experience and know-how through cooperation with domestic and international partners. By hosting events, training courses and conferences, T4E strengthens collaboration between people, supports organisations and bridges gaps between generations. The wide expertise in management enables T4E staff to provide consultancy to large companies and SMEs using EFQM Model and Business Model Canvas.

Osmaniye Provincial Directorate of National Education is a regional governmental organisation. Osmaniye covers an area of 3,767 km² and its population is 538.759 inhabitants. Osmaniye province is divided into 7 districts. The organisation takes care of the planning and coordination of all kinds of educational and training activities from preschool to the end of secondary school, vocational high schools, technical schools, adult education and other institutions & centres in its region.

Osmaniye MEM organised many courses since 2019 for teachers to renew themselves and over 5000 teachers benefited from these courses. The project experts in the Research and Development office in our Institution have carried out the training of teachers, local or regional authorities and NGOs on preparing and managing EU projects. With these training activities more than 600 students, teachersand managers actively took part in EU projects.