



Digital Assessment for Learning informed by Data
to motivate and Incentivise Students



DALDIS

GREECE CASE STUDY REPORT

Digital Assessment for Learning
informed by Data to motivate
and incentivise students

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DALDIS Greece – Report (2022)

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Executive Summary

The DALDIS/JCQuest project comprising eight partners from six European countries, aimed to explore the potential of digital technologies to support *Assessment for Learning (AfL)*, often referred to *Formative Assessment (FA)*. Two curriculum areas, Science and Modern Foreign Language (MFL) Learning, for years 5 through 9, were the key focus. The idea was that school based partners in participating countries would develop question sets/lesson units focussed on their own curricula in these subjects to trial and test out AFL methodology using technology. As *Feedback* plays a central role in AFL the system was designed to provide feedback to students on their progress and help them understand their mistakes. In addition, through the use of a powerful database capturing students learning activities, a teacher dashboard had the potential to provide teachers with insights into student learning and understanding of key concepts, while opening up possibilities for increased personalisation.

Their case study reports on the findings from the implementation of DALDIS/JCQuest in the Doukas school in Athens based on student and teacher questionnaires and follow up interviews with key teachers. Doukas, with approximately 1,600 students is a large Greek school located in the Maroussi suburb in the north-eastern part of Athens. It is a non-fee-paying co-educational secondary school. The average class size is 21-25 students. While a total of 244 students used the DALDIS resources the Greek pilot focussed on its use with 50 students, 33 of whom (56% female and 44% male) completed the questionnaire. All respondents were 2nd year students (8th grade), aged 12-14. Students reported using the DALDIS/JCQuest resource for 3 subjects - Science (52%), Biology (33%), and English (15%).

Questions on the school use of DALDIS reveal that students predominantly used the platform in the days before an exam or test to help them revise (48%). A similar pattern was detected for home usage where 45% used it for revision. The majority used the platform at home more (55%), with half that number (27%) indicating using it at school. A small number (18%) used it both in school and at home.

Almost all students reported that DALDIS/JCQuest was easy to use, and all of them used an iPad or other tablet as they are all used to accessing learning content in digital form on their tablets. All enjoyed using the material, and most report that the materials helped them learn and increased their

interest in the subject. The preferred question type for the majority of students (79%) was learning questions with feedback, followed by multiple correct (21%) at a very distant second. Students valued the feedback provided following submission of their answers. The feedback helped them learn better and understand where they made a mistake. However, while just over one third felt that their learning improved while using DALDIS/JCQuest, a significant number (55%) seemed unsure even though a majority of respondents (52%) said that the visual materials incorporated into the resource helped them learn. Almost all students would like the school to continue using the DALDIS/JCQuest resource, and they would also like to see JCQuest materials created for all subjects.

The active member of the Doukas pilot team comprising three STEM teachers, with specialisms in Biology and one English language (EFL) teacher, completed the teacher questionnaire. Supplementary research interviews were also conducted three of them, (two STEM and one EFL) as they had been involved in the creation of the Greek DALDIS/JCQuest content. With an age range from 31 to 50, the questionnaire indicates they are all experienced practitioners teaching students from first year right up to sixth year and that they teach English, Physics, Technology, STEM, Biology and IT. They all agreed that their school is well-resourced in digital technology, and most (75%) state that the school encourages the use of technology. Most of them thought the DALDIS/JCQuest online resources helped support learning and engaged their students. They all agreed that DALDIS helped their students understand and correct their own mistakes and the majority (75%) believed that the material aligned with the national curriculum. They also stated they made good use of the dashboard for teachers. Finally, and importantly, since their participation in the project, all of them declared that they now feel more confident using AfL and see themselves using the platform in the future.

Chapter One

The DALDIS Project Overview

The DALDIS (Digital Assessment for Learning informed by Data to motivate and incentivise students) Project is a three-year EU funded Erasmus+ eAssessment Project that commenced in 2019. Involving eight partners and schools in five countries (Ireland, Poland, Turkey, Greece and Denmark) the project aimed to pilot test and adapt a digital assessment for learning solution designed to drive students' learning progress using well designed question sets and student feedback. Although Assessment for Learning (AfL) or Formative Assessment (FA) using digital technology has great potential for teaching and learning (Maier, 2014; Russell, 2010) it is still in its infancy and not widely used in European classrooms. DALDIS set out to address this deficit by designing and researching the application of AfL methodology using technology for two subject areas - Science and Modern Foreign Language learning (MFL), namely English and French, in years 5 through 9.

DALDIS is underpinned by AfL/FA theory and educational technology. The project is built on the principle that formative assessment is one of the best methods to encourage student achievement (Hattie, 2009) and William and Black's (1988) definition of formative assessment practices as methods of feedback which inform teaching and learning activities. Good assessment practices are essential for learning and teaching and the increased use of technology in education has been demonstrated to improve assessment at various levels (JISC, 2007). However, the implementation of formative assessment in education has proven to be challenging (Birenbaum DeLuca, Earl, Heritage, Klenowski, Looney, Wyatt-Smith, 2015; Marshall & Drummond, 2006) due to deficits in both teachers' assessment literacy skills (Doolin, Black, Harlen & Tiberghien, 2018; Popham, 2011) and technology skills. Teachers need to be assessment-literate and technology literate to effectively utilise eAssessment systems (Lee, Feldman & Beatty, 2012; Feldman & Capobianco, 2008). Research has shown that the role of assessment literacy in teacher education programs is limited (DeLuca and Bellara, 2013), that the successful implementation of AfL requires long-term professional development (Gottheiner & Siegel, 2012) and that greater investment is needed in teacher education to exploit the potential and usage of technology in the classroom (OECD, 2015; Stringer, Lewin & Coleman 2019).

The backbone of the project is the Study Quest technology platform (www.study-quest.com) and methodology in which well-designed question-sets and student feedback help to build students' knowledge and understanding of core curriculum concepts. To this end a key feature of the DALDIS project design is the use of carefully designed 'Feedback' for all questions that helps to 'nudge' students towards the right answer while at the same time reinforcing basic knowledge and conceptual understanding. This is achieved by giving feedback on both correct and incorrect answers thereby eliminating the perils of guesswork where students choose the correct answer by chance, or do not understand why the answer they chose is wrong when a simple 'X' with no explanation appears. An example of the type of online feedback that DALDIS provides is illustrated in figure 1, below.

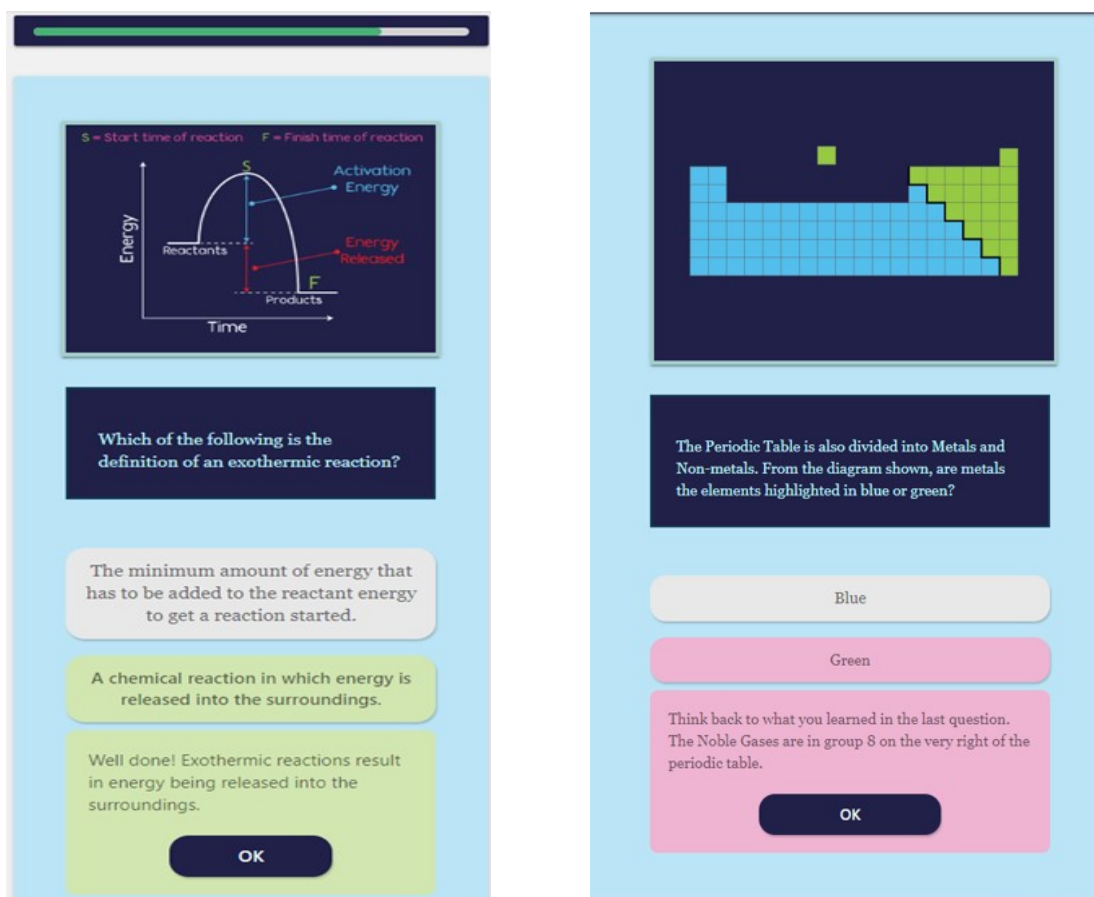


Figure 1. Feedback for RIGHT and WRONG answers Supports the student with positive 'nudges' in DALDIS

At a technical level, DALDIS, underpinned by Study Quest, incorporates the most important elements of a robust eAssessment system including ease of use and accessibility, interoperability,

security, and effective feedback features to provide vital information to students and teachers. Importantly, it has been designed to support a variety of systems, devices, and browsers at school and at home (Tomasik, Berger & Mosser, 2018). It also provides functionalities to manage student assessment data such as background statistical information and analysis of student progress (Figure 2) via a teacher dashboard.

The first implementation of StudyQuest known as JCQuest (www.jcquest.ie) was substantially complete in beta form immediately prior to the project's commencement. Targeting Science and French (MFL) in Ireland's Junior Cycle Curriculum, a 3-year programme aimed at 12–15-year-olds, this innovative resource comprises multiple choice question-sets in the form of lesson units, derived from core curriculum resources which ensures the assessment material fully aligns with classroom lessons. DALDIS set out to create similar adaptations, working models and curriculum aligned question-sets for its school based partners in Poland, Turkey, Greece and Denmark and evaluate their effectiveness. Thus, united by a common technology platform and methodology the project consortium came together under the auspices of DALDIS to trial and test out an eAssessment approach to AfL/FA in their respective countries and adapt it for their own specific curricula. As each country has its own story to tell this case study will now exclusively present and report on the experience of piloting the DALDIS project in Greece.

Chapter Two

Overview of Greek Education System and the DALDIS Project School

Introduction

This report provides information on the implementation and evaluation of DALDIS/JCQuest in a secondary school in Athens. To enhance context and understanding this chapter contains an overview of the Greek education system.

Greece's Education System

The Greek education system has a long and distinguished history, stretching back to the Ancient Greeks, who developed the first formal education system and has significantly influenced the development of education around the world. The system has evolved over time, but the core principles remain the same. In Greece, education is compulsory for children aged 6 to 15, is highly valued and seen as the key to success. After the compulsory phase, students can continue their education in either vocational or university. Vocational schools offer courses in a range of technical and practical skills, such as engineering, carpentry, and mechanics.

Greece also has several private schools which offer a more specialized education. These schools are often more expensive, but they are highly regarded for their quality of education. The Greek education system is highly competitive, and students must work hard to succeed. In addition to the academic side of education, the system also focuses on developing social skills. Students are taught to be respectful of others and to have a sense of responsibility. This emphasis on social skills is regarded as just as important as the academic side of education.

The secondary school system in Greece is one of the oldest in the world and has been in place since the late 19th century. It is a three-tiered system that consists of the Gymnasium, the Lyceum, and the Epal. In the Gymnasium, students begin their secondary education at twelve and study for four years. The curriculum is mainly focused on the humanities and sciences, and students are expected to acquire a broad range of knowledge. They also learn the basics of Greek, Latin and foreign

languages. The Lyceum is the next step in the secondary school system and is designed for students aged sixteen and above. It is divided into two branches: the General Lyceum and the Technical Lyceum. The General Lyceum focuses on the humanities and sciences, while the Technical Lyceum focuses on technical and vocational subjects. Students who complete the General Lyceum can continue their studies at the university level. Finally, the Epal is the third and final stage of the secondary school system. It is designed for students aged eighteen and above and focuses on vocational and technical subjects. The curriculum is highly specialized and focuses on preparing students for the job market. The Greek secondary school system strives to be a comprehensive system that provides students with a solid foundation for further education and career development.

Background and Context

The research on the implementation of DALDIS/JCQuest took place in the Doukas school in Athens and this report is based on student and teacher questionnaires and follow up interviews with key teachers. Doukas, with approximately 1,600 students, is a large Greek school located in the Maroussi suburb in the north-eastern part of Athens. It is a non-fee-paying co-educational secondary school, with an average class size is 21-25 students. While a total of 244 students used the DALDIS resources, the Greek pilot focussed on its use with 50 students. From this group, thirty-three students (56% female and 44% male) completed the questionnaire. All respondents were 2nd year students (8th grade), aged 12-14. Students reported using the DALDIS/JCQuest resource for three subjects - Science (52%), Biology (33%), and English (15%).

Chapter Three

Students and their Perspective on the Implementation of DALDIS/JCQuest in Greek Schools

Introduction

This chapter deals exclusively with the feedback data obtained from students in a coeducational secondary school in a suburb of Athens. As a result, while much interesting and valuable data was obtained, the information and conclusions in this report cannot be interpreted as being representative of all Greek schools. The school has a one-to-one device policy with each student having an iPad to access digital content. Several key points emerge from the data: students predominantly used the platform at home and in school in the days before an exam or test to help them revise, almost all reported that DALDIS/JCQuest was enjoyable and easy to use, and the platform helped them learn and increased their interest in the subject. In particular the valued learning questions with feedback, which helped them understand where they made a mistake. Almost all students would like the school to continue using the DALDIS/JCQuest resource, and to see similar materials created for all their subjects.

In the interests of clarity and readability, the following classification terms will be used in the following sections used when presenting the numeric (quantitative) findings from the student surveys.

Classification Term	Approximate Occurrence %
Almost All	More than 90%
Most	75-90%
Majority	50-74%
Less than half	25-49%
A small number	16-24%
A few	Up to 15%

Table 3.1 Use of Classification Terms and Approximate Occurrence

Key Demographics and Subject Data

While a total of 244 students used the DALDIS/JCQuest resources, 50 students took part in the main pilot study. Of these 33 students completed the questionnaire which consisted of 19 questions (25 items) that examined critical aspects of students' interactions with DALDIS/JCQuest, such as feedback usefulness, ease of use, access to devices, classroom and home use, preferred type of questions, and overall benefits as a learning tool. All respondents were 2nd year students (8th grade), aged 12-14 and reported using the resource for 3 subjects - Science (52%), Biology (33%), and English (15%).

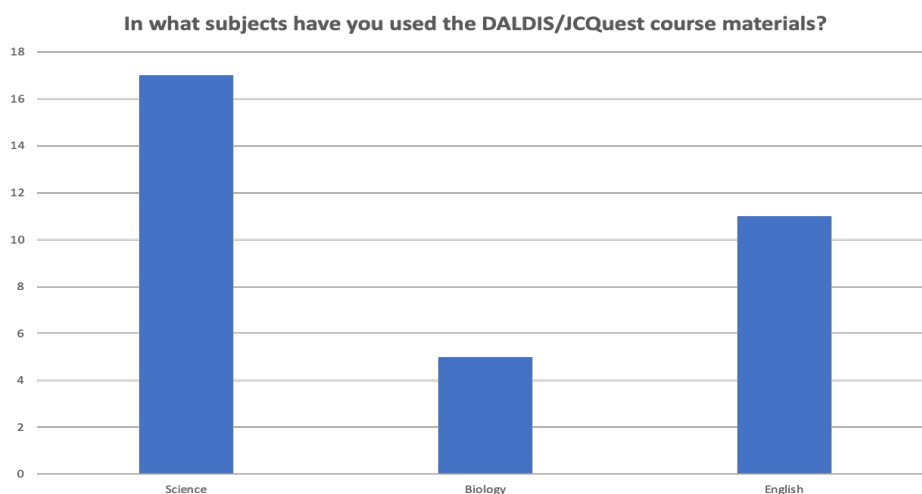


Figure 3.1 In What Subjects Have You Used the DALDIS/JCQuest Course Materials

School and Home Usage

Questions on the school use of DALDIS revealed that students' use was relatively infrequent, and predominantly used the platform in the days before an exam or test to help them revise (48%).

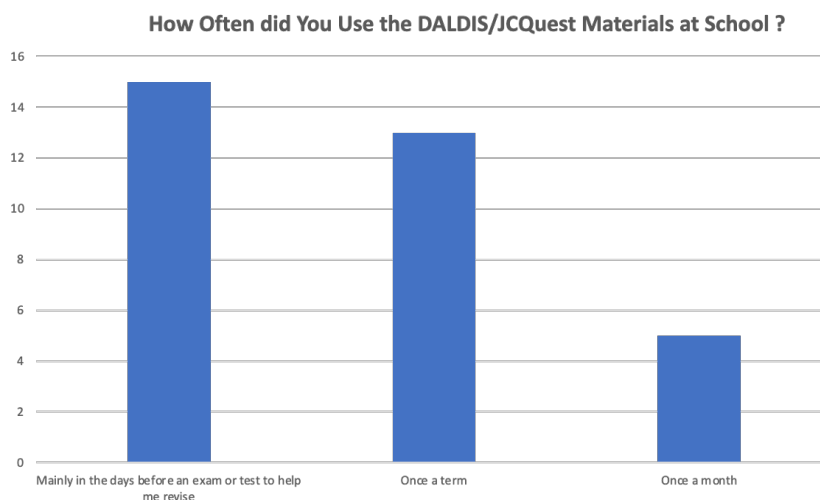


Figure 3.2 How Often did You Use the DALDIS/JCQuest Materials at Schools?

A similar pattern was detected for home usage where 45% used it for revision. The majority of students used the platform at home (55%), with half that number (27%) indicating using it at school. A small number (18%) used it both in school and at home.

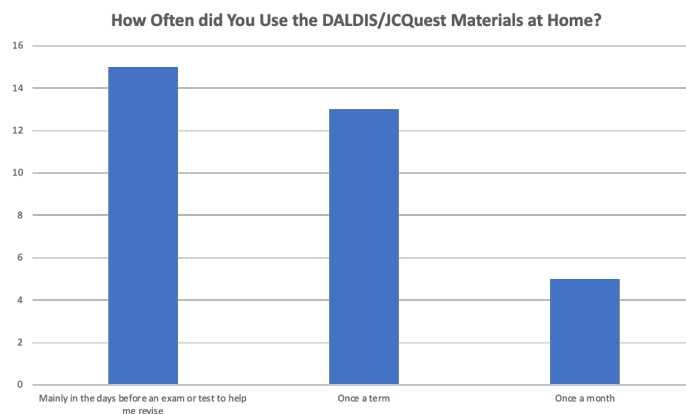


Figure 3.3 How Often did You Use the DALDIS/JCQuest Materials at Home?

Devices Used by Students

There was one type of device used to access the DALDIS/JCQuest at school and at home, namely iPads or other tablets. The school implements a one-to-one device policy using iPad tablets as the device of choice to facilitate access to content in digital form on their tablets.

Ease of Use of DALDIS/JCQuest

All respondents strongly agree (52%) or agree (48%) that the DALDIS/JCQuest platform was easy to use. In addition, similar numbers strongly agree (58%) or agree (42%) that they enjoyed using the DALDIS/JCQuest materials.

Learning Benefits

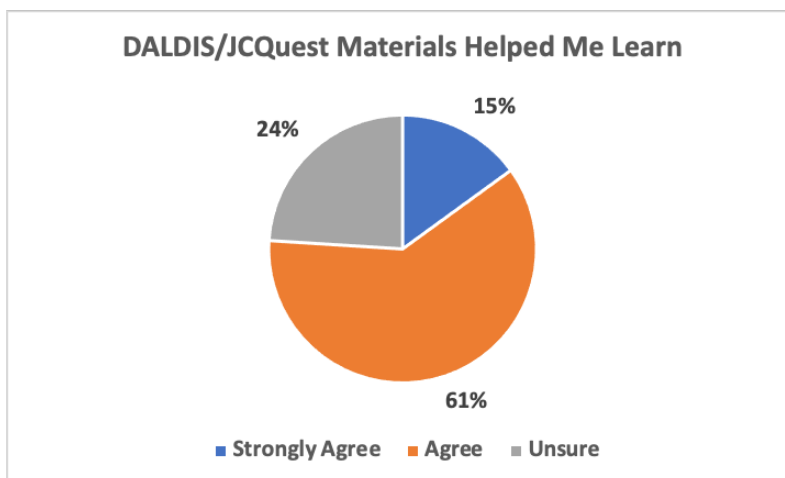


Figure 3.4 DALDIS/JCQuest Materials Helped Me Learn

Most students (15% strongly agree and 61% agree) believed that the DALDIS/JCQuest materials helped them learn but a quarter were unsure. However, in a seemingly conflicting finding, just over one third felt that their learning improved while using DALDIS/JCQuest, but 55% seemed unsure. While on the one hand this may be interpreted that the materials were quite suitable for the purpose for which most students used them, i.e., revision; on the other hand, it also suggests an awareness on their part that their learning at a broader and deeper level did not improve and this could be due to infrequent use of the resource during class time.

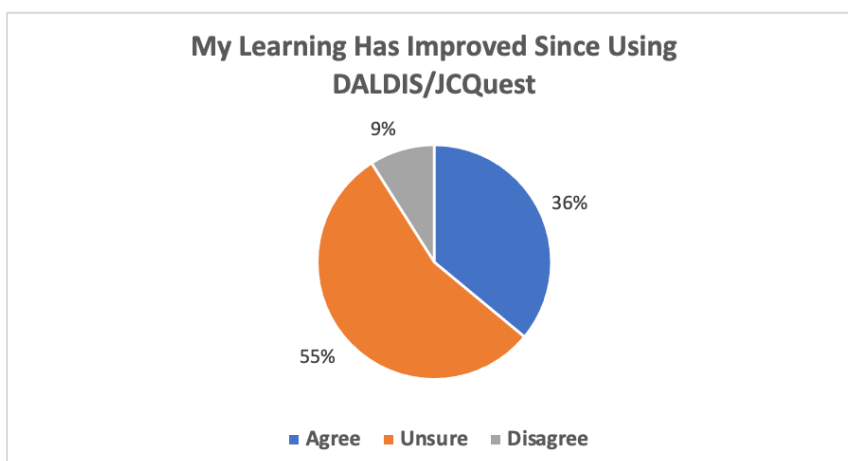


Figure 3.5 My Learning has Improved Since Using DALDIS/JCQuest

Feedback and Preferred Questions Type

Based on Your Experience of Using DALDIS/JCQest, which Type of Question Did You Like Best?

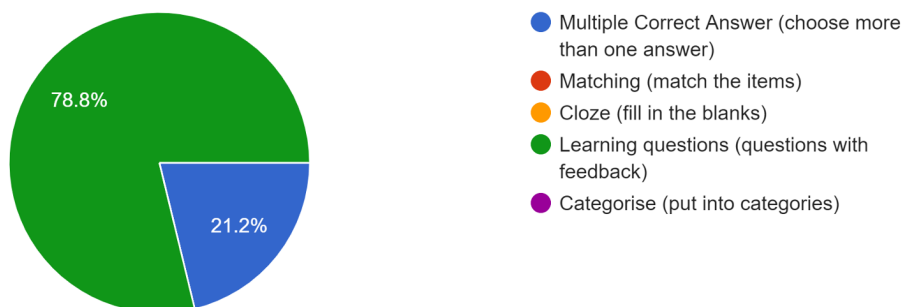


Figure 3.6 Which Type of Question Did You Like Best?

The preferred question type for the majority of students (79%) was learning questions with feedback, followed by multiple correct (21%) at a very distant second. Students valued the feedback provided following submission of their answers. The feedback helped them learn better and understand where they made a mistake.

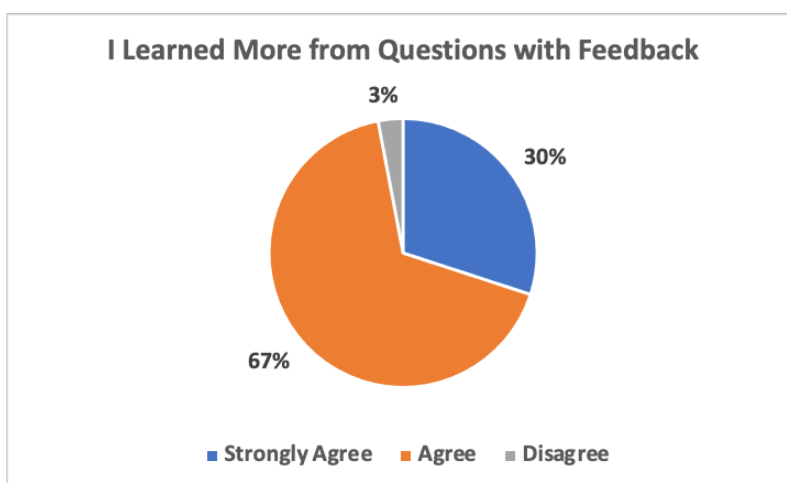


Figure 3.7 I Learned More from Questions with Feedback

Almost all students (97%) learned more from questions with feedback (strongly agree 30%, agree 67%). Only a few (3%) disagree. Most students (88%) report that the feedback helped them to understand where they went wrong, while a few (12%) stated they were unsure if feature this had helped them.

Use of Pictures

The Use of Pictures in DALDIS/JCQuest Helped Me Learn

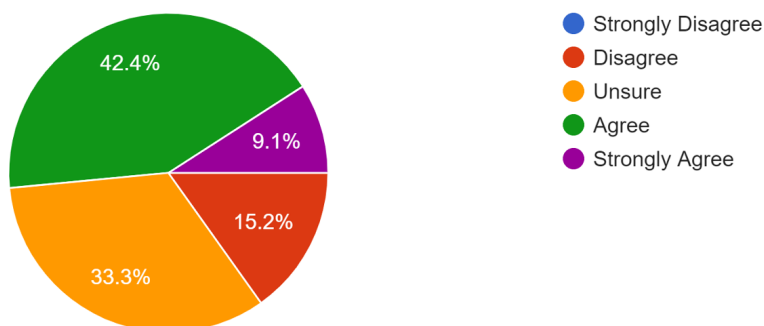


Figure 3.8 *The Use of Pictures in DALDIS/JCQuest Helped Me Learn*

The majority strongly agreed (9%) or agreed (42%) that the use of pictures in DALDIS/JCQuest helped them to learn. However, about one third were unsure about this with 15% disagreeing that the pictures had helped them to learn.

I Would Like to See the School Continue to Use DALDIS/JCQuest

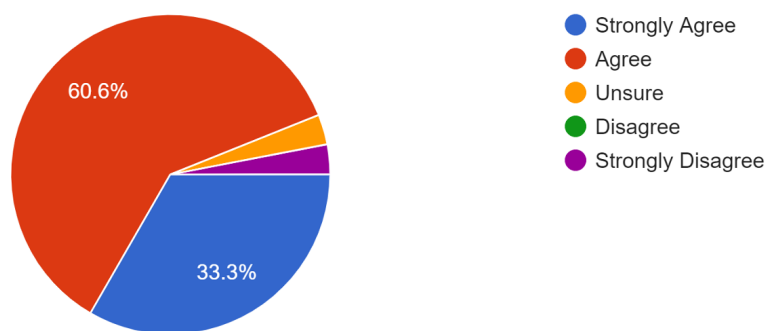


Figure 3.9 *I Would Like to See the School Continue to Use DALDIS/JCQuest*

Almost all students (94% - 33% strongly agree, 61% agree) would like to see their school continue to see their school use the DALDIS/JCQuest course materials.

I Would Like to See DALDIS/JCQuest Materials Used for Every School Subject

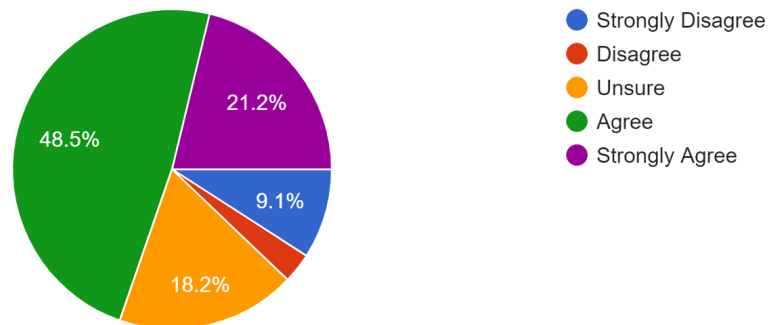


Figure 3.10 *I Would Like to See DALDIS/JCQuest Materials Used for Every School Subject*

The majority would like to see DALDIS/JCQuest materials used for every school subject and almost half of the students (agree 48.5%, strongly agree 21%) A small number (18%) were unsure, and a few (12%) disagree (9%) or strongly disagree (3%).

What Did You Like Best About Using DALDIS/JCQuest

In response to the survey’s open question on what they liked best about DALDIS the majority of students (65%) answered that that they like varied DALDIS/JCQuest question types that can be grouped into broad categories such as: feedback approach, use of pictures, and useful tool for homework (see figure).



Figure 3.11 *What Did You Like Best about Using DALDIS/JCQuest?*

Suggestions for Improvements and Continued Use of DALDIS/JCQuest

The majority stated that DALDIS/JCQuest did not need to improve. A small number indicated a variety of additional feature illustrated in the figure below (18%). A few (4%) indicated that they would like to see the incorporation of more gamified features such as score keeping and facility to compete with their peers on total scoring.



Figure 3.12 Suggestions for Improvements and Continued Use of DALDIS/JCQuest

Chapter Four

Teachers and their Perspective on the Implementation of DALDIS/JCQuest in Greek Schools

Introduction

In this chapter, there is analysis of quantitative and qualitative data gathered from teacher surveys and interviews to identify key trends, including how they interacted with students, perceived usefulness and ease of use, impact on teaching and learning, teachers' understanding of Assessment for Learning (AfL) and how a system like DALDIS/JCQuest handles AfL and other more detailed app usage issues. This chapter deals exclusively with the feedback data obtained from the four teachers who participated in the piloting of DALDIS/JCQuest in Greece. The content of the questionnaires was analysed, as well as in-depth research interviews conducted with three teachers from this group to confirm, deepen and enrich the information resulting from quantitative data analysis of the surveys.

Data Sources Data was collected using the following tools and techniques:

- Detailed questionnaires completed by 4 teachers - 3 from the STEM Department, including the Head of Department, and one from the English as a Foreign Language (EFL) Head of Department.
- In-depth interviews with three teachers, two of whom had created the resources for STEM and EFL, namely the Head of the STEM Department and the Head of the EFL Department.

Questionnaires A four-part questionnaire was used to collect data from four teachers who took part in the study. Part 1 gathered general information regarding the type of school, location, and pupil numbers etc., and Part 2 asked about the use of digital technology. The questions in Part 3 specifically related to formative assessment while Part 4 focused on the teachers' overall perceptions of the DALDIS/JCQuest system.

Interviews In addition to completing questionnaires, three teachers also took part in semi-structured interviews that sought to delve deeper into their experience and opinions about using the DALDIS/JCQuest system for teaching and learning. The rationale for conducting interviews with teaching staff was to hear first-hand accounts, feelings and perspectives of the experience of using

the system. Throughout the interviews, teachers were asked to provide examples to support their responses wherever possible.

Teachers Interviewed Three teachers, two STEM teachers specialising in Biology and an English (EFL) teacher had used the platform with students both in the classroom and as a homework assignment and, for the purposes of this report, we use the following names:

- **Teacher 1**, a biology teacher in lower and higher secondary education, and has worked for over 10 years having previously worked in the pharmaceutical industry.
- **Teacher 2**, a STEM teacher with three years’ experience.
- **Teacher 3**, an English (EFL) teacher for 20 years.

Teachers 1 & 3 are Heads of Departments and had been involved in the creation of the Greek DALDIS/JCQuest content.

As with the student data in the interests of clarity and readability, the following classification terms will be used in the following sections used when presenting the numeric (quantitative) findings from the teacher surveys.

Classification Term	Approximate Occurrence %
Almost All	More than 90%
Most	75-90%
Majority	50-74%
Less than half	25-49%
A small number	16-24%
A few	Up to 15%

Table 4.1 Classification Terms and Approximate Occurrence

Key Demographic and Subject Data The questionnaire data indicates all the teachers were experienced practitioners with an age range from 31 to 50. They taught students from first year right up to sixth year, and taught English, Physics, Technology, STEM, Biology and IT.

Technology Infrastructure and Usage In this section teachers were asked to respond to four important statements on school policy related to the presence and function of new technologies in the schools. Almost all agreed that their schools were well resourced, their confidence in using digital

technology is a feature of this report, and the school encourages teachers to use technology to support and enhance their teaching and learning.

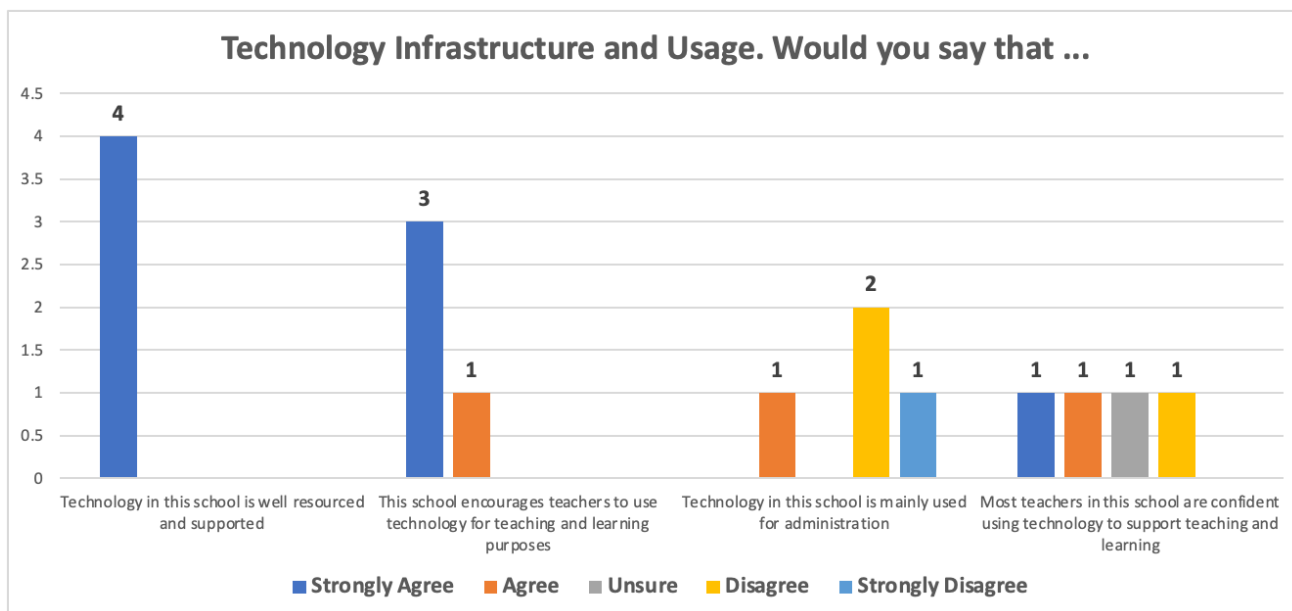


Figure 4.1 Technology Infrastructure and Usage

When asked about their use of technology, Teacher 1 stated:

“We operate a one-to-one model with the iPads in our school ... we were encouraged to use DT [sic Digital Technology] for assessing students’ progress and teaching effectiveness. ... in the STEM department, as in Greece there is not officially a STEM subject in the national curriculum, and we had to choose and develop our own learning content which we wanted to see and study how successful it was in achieving the learning objectives.”

Teachers’ Own Use of Technology

There is a lot of relevant digital technology (DT)

experience and expertise in this group of teachers with Teacher 3 saying: *“I felt comfortable in both developing the content and using this type of assessment.”* She added:

“I was very comfortable as I am one of the first teachers in my school to become a Microsoft Innovative Expert and Trainer and have familiarised myself with using technology enhanced teaching and learning for the past 15 years, being able to follow the progress of ICT in education.”

Teacher 2 reported that:

“My background is not only in science and biology, but also in informatics. Being also a STEM robotics teacher and having to use technology and programming as part of the lessons, I was very comfortable with using technology in my everyday practice.”

Finally, Teacher 1 confirmed the level of confidence, experience, and expertise (illustrated in *Figure 3.2* below) when she added:

“As I mentioned before, it’s been more than 15 years that we have implemented an 1-1 model with each student having his/her own iPad, thus we have been using technology in education for many years allowing us to feel, up to a sensible point, comfortable with using it.”

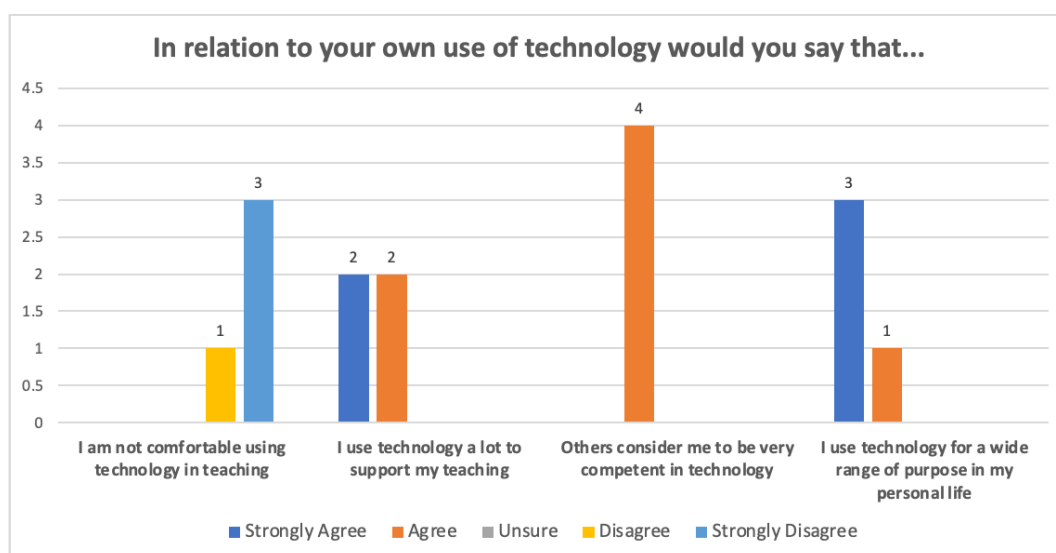


Figure 4.2 In Relation to Your Own Use of Technology, Would You Say that ...

Usage of DALDIS/JCQuest All three teachers used DALDIS/JCQuest for homework and revision. Teacher 2 said, “I used it mainly as homework and as a revision tool advising students to do their last revision using the DALDIS/JCQuest.”

Teacher 1 confirmed similar pattern of usage:

“I used it mainly as homework for my students ... and also as a revision tool from home for past topics and lessons. Developing and knowing the content and its alignment with the lessons planned for the classroom, was for sure a critical factor to use the DALDIS/JCQuest effectively in my opinion.”

Within the EFL Department, Teacher 3 described how the platform was used:

“In the case of the English Department, we used it more in the classroom but also at home as students were free to repeat the lessons they choose to. When in the classroom, we used DALDIS as a fun exercise at the end of the lesson leaving some time to go through the questions and see the correct answer. In the first part students work alone using their tablets whereas in the latter it is more of a team activity.”

Help and Support As can be seen in the charts below, the teachers gave a variety of responses to this section but overall there is a willingness to use technology without the need for extensive support. The majority agreed that it would be helpful if they could call someone for help if they got stuck but disagreed that it would be necessary to get someone to help them get started. While three of the four teachers had never used a technology like DALDIS/JCQuest before, all of the respondents indicated that they would appreciate if there was someone around to help if they got stuck. All of the teachers would also welcome having someone help them to get started, showing them how to use the platform effectively at the initial stages As is common with the implementation of technology initiatives throughout education, two teachers said that they would be more successful if they had sufficient time to complete the task for which the technology was provided. As Teacher 2 explained:

“... the time pressure we have to align with the national curriculum, and any room for freedom there is, we have already made could use of it by introducing interdisciplinary STEM lessons.”

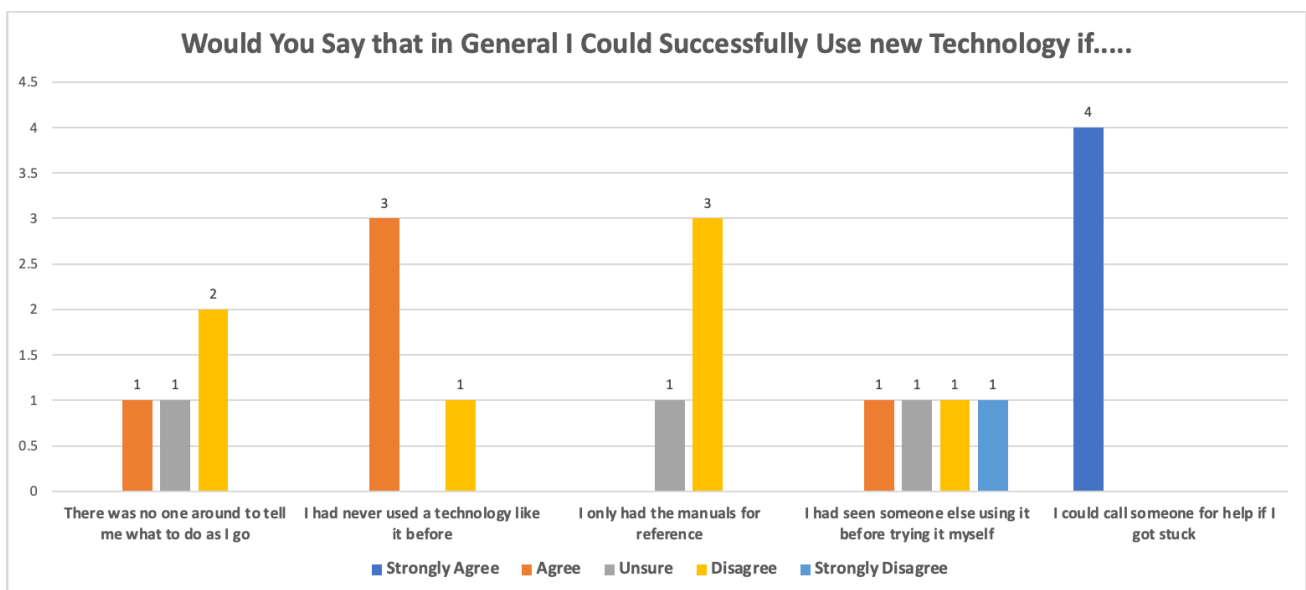


Figure 4.3 *Would You Say that in General You Could Successfully Use New Technology if ...*

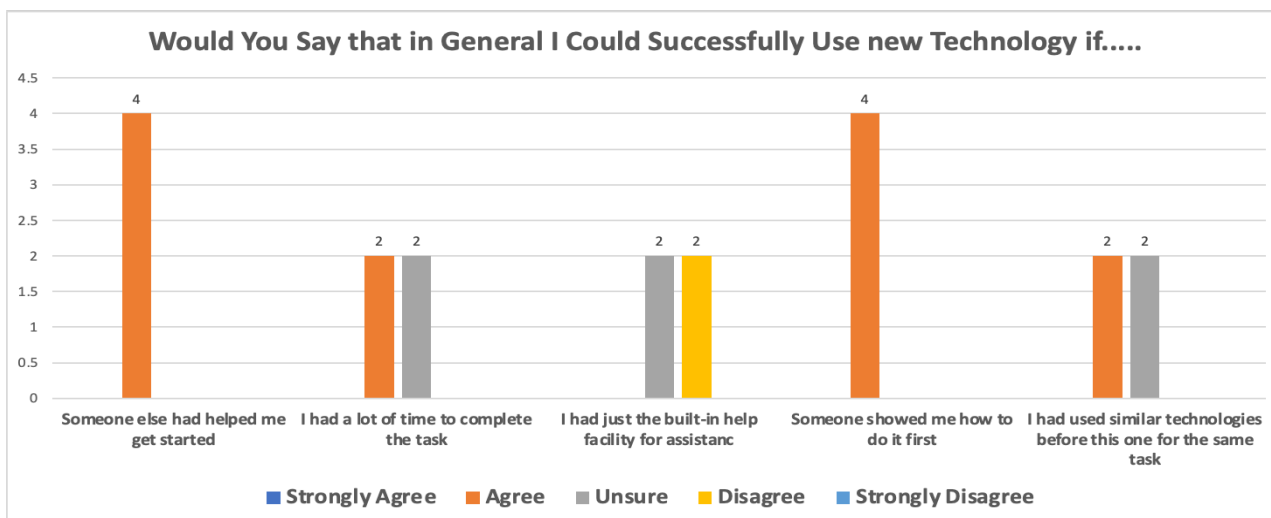


Figure 4.4 *Would You Say that in General You Could Successfully Use New Technology if ...*

Teacher 2:

“I was not so familiar but did not find the implementation of such an assessment method neither hard to integrate to my practice nor to use the results and outcomes to monitor how students’ progress and more importantly if the lesson we had in the classroom has achieved its goals.”

Approaches to Assessments

Another group of questions concerned their approach to assessment as a tool supporting their work with students, as well as to formative assessment and the use of digital technologies to support both general assessment and formative assessment. The first question from this section asks what student assessment is used for. Informing students of their progress and guiding them to develop further are central pillars of these teachers’ approach. Improving students through feedback is also important. Helping students learn through identifying their own mistakes and testing how much students have learned were highlighted as being central to good practice in the opinion of these teachers.

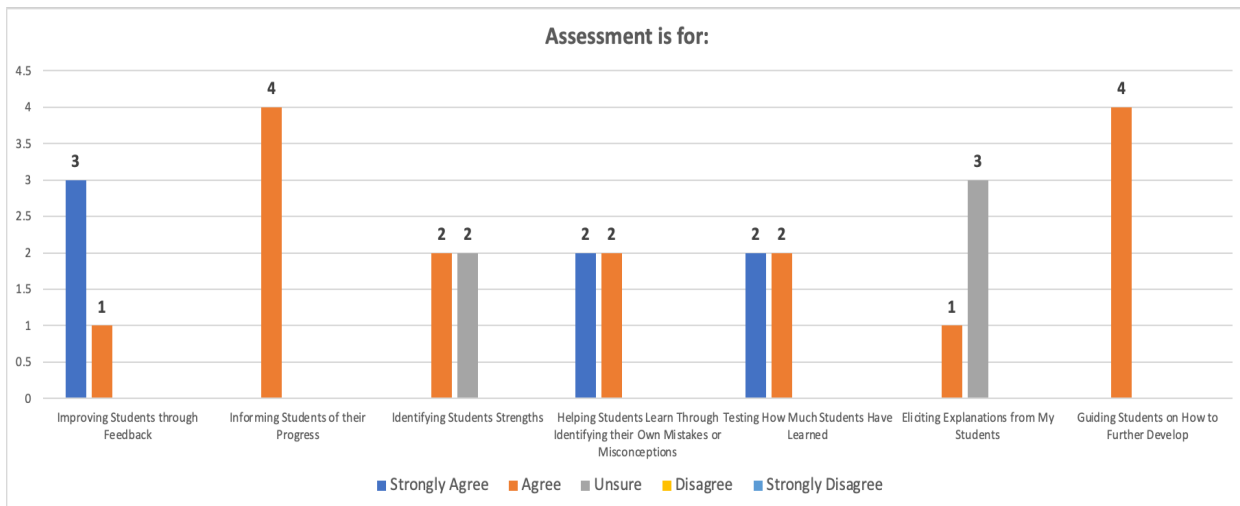


Figure 4.5 Assessment is for ...

Teachers were also asked to rate whether the use of assessment technology was easy to integrate into their daily assessment practice and their strategies for providing students with feedback on their learning progress. All of the teachers felt that technology helps teachers monitor student progress. As can be observed, the use of technology for classroom management and administration generated a variety of responses.

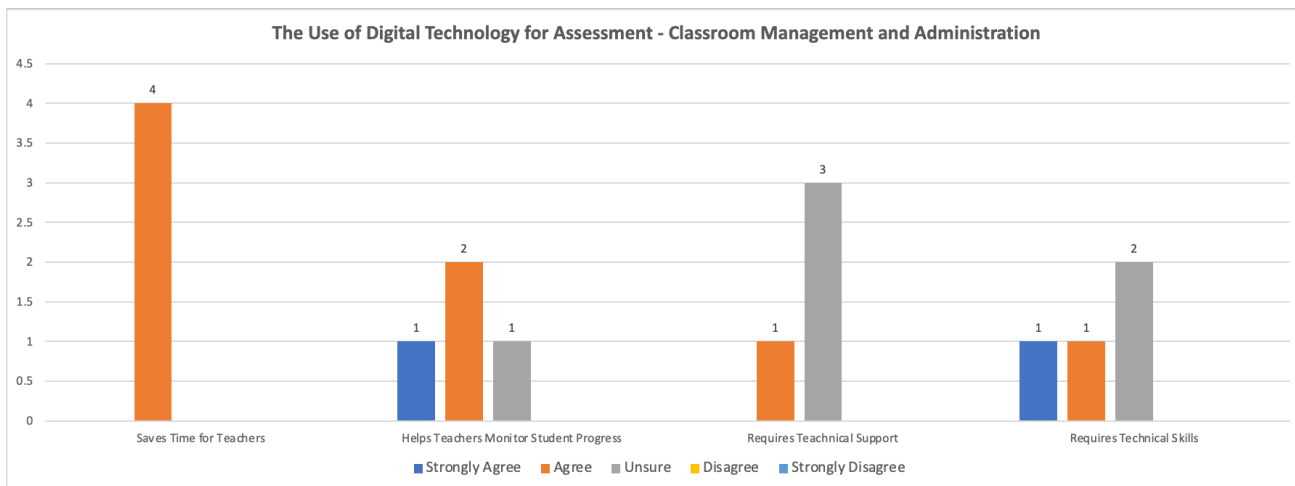


Figure 4.6 The Use of Digital Technology for Assessment – Classroom Management and Administration

In terms of administration, all of the teachers thought that DT saves time for teachers but the need for technical support and technical skill is less of a concern, which is consistent with the information above regarding the technical competence of this group of teachers. Undoubtedly, for teachers participating in the project, student assessment is not only a tool for administrative management of

the teaching and learning process, but above all a way to communicate with students, show them their strengths and inspire them to develop

The question of whether the use of technology is more suitable for formative assessment or for traditional types of summative assessment indicates a similar level of inconsistency or difference of opinion.

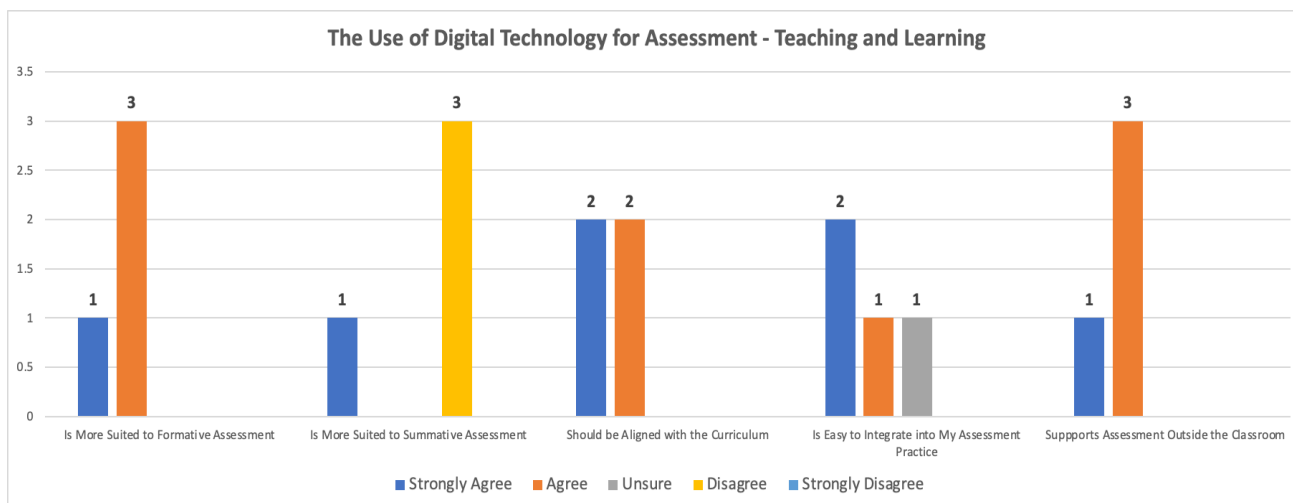


Figure 4.7 The Use of Digital Technology for Assessment – Teaching and Learning

Formative Assessment

In response to being asked in interview how their students benefit from AfL, Teacher 3 replied:

“Students benefit ... having a continuous feed-back on the effectiveness of the learning process allows for the teacher to modify and adjust what is needed to succeed better outcomes.”

“...[I] would like to add that it also supports students’ self-regulated learning process as it provides them, if used properly, with constant feedback on how their knowledge and skills development is progressing.” Teacher 1

Main Challenges in Integrating AfL Teacher 2 highlighted:

“I felt that sometimes my students were not very serious in replying to the questions and felt unsure if some of them would make could use of the feedback. ... I mean if they have the maturity to make good use of the tool and the information, they could get by making good use of the feedback.”

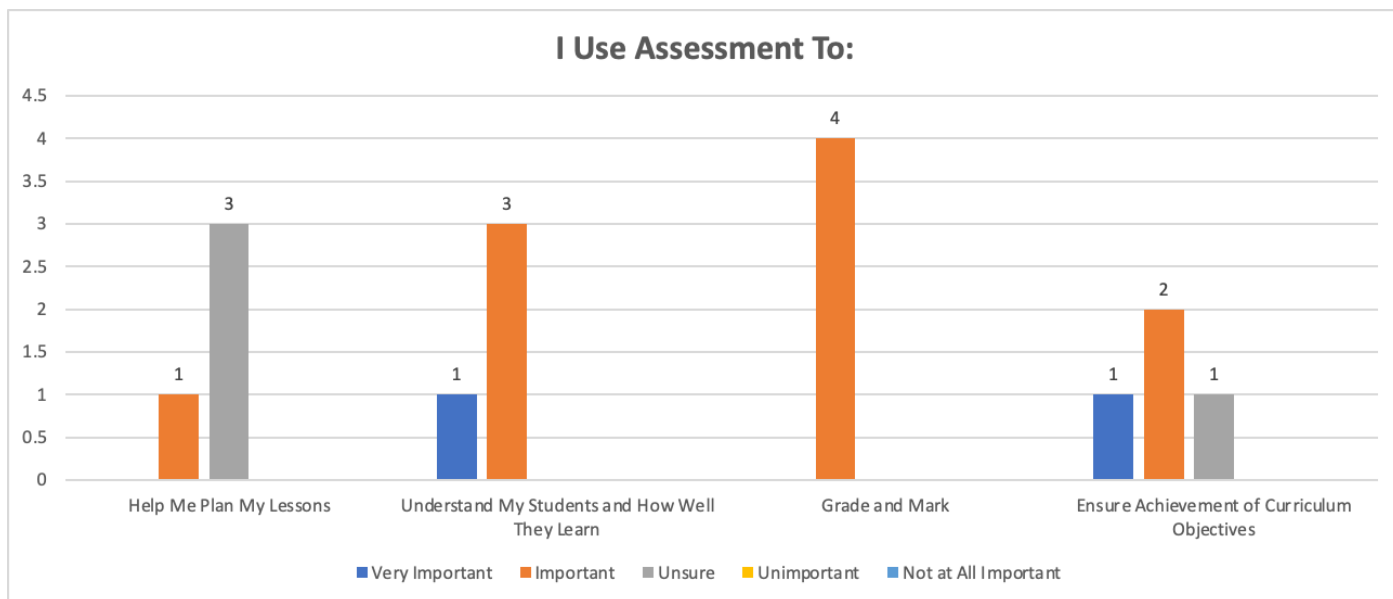


Figure 4.8 I Use Assessment to ...

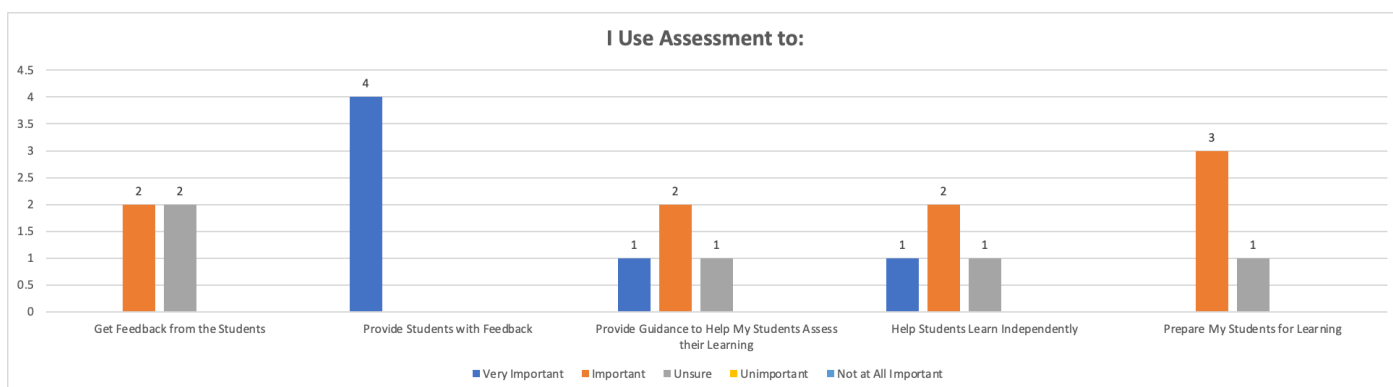


Figure 4.9 I Use Assessment to ...

The last question on teachers' attitudes towards assessment was related to formative assessment. They were again asked to respond to several statements. The distribution of answers is presented in the charts above.

As can be observed in the graph overleaf, the teachers were unsure if a ubiquitous barrier to the use of formative assessment - time – was a concern for them. However, three of the four teachers highlighted the need for further training and professional development to enhance the integration of AfL into their daily practice. As Teacher 1 noted:

“AFL in general is important and is an approach that we like to use in the school as it is important to have ways to get regular feedback on students’ learning progress in order to

adjust and modify, if needed, the teaching in order to achieve the learning objectives set by the teacher and the national curriculum. Therefore, DALDIS/JCQuest can be a tool that is used among and in parallel with other tools and techniques in order to get that feedback from students.”

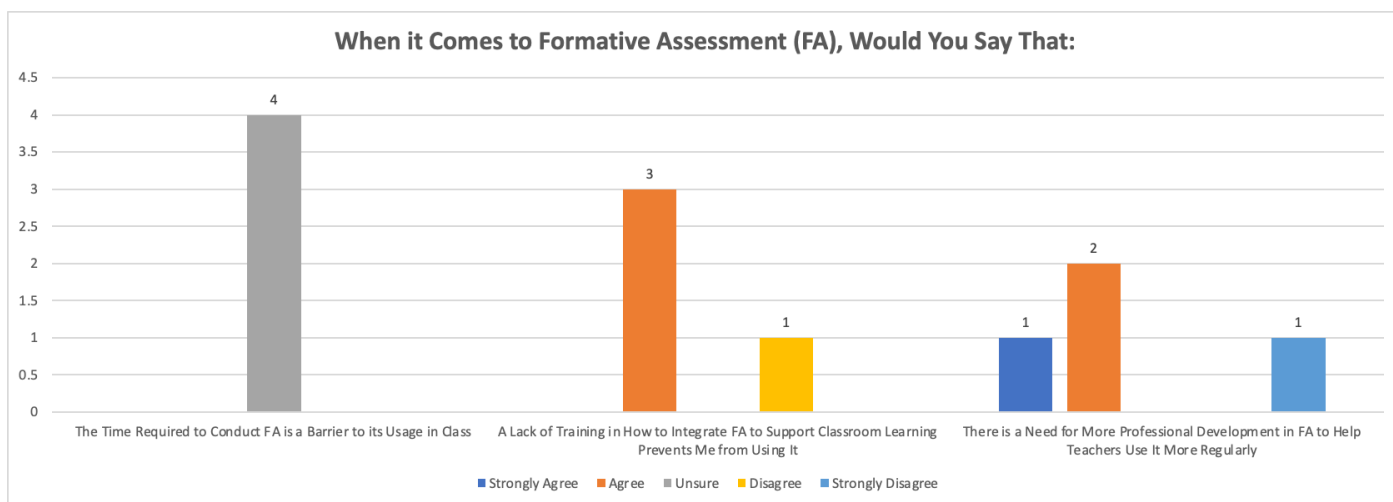


Figure 4.10 *When It Comes to Formative Assessment (FA), Would You Say that:*

Feedback The value of feedback, which emerged from analysis of the student data, also arose as a feature in the questionnaire and interviews with staff. The general consensus was that feedback was very helpful. Most teachers regarded the provision of feedback as the most important feature of DALDIS/JCQuest. As Teacher 1 described :

“There are two types of feedback, and I will reply for both. The feedback for students is useful to them as it reflects on the knowledge obtained in the classroom that would allow them to reply correctly to the question. ... The feedback to teachers is also a critical feature as it is crucial for a formative assessment to be feasible. The way the feedback is displayed to the teacher is convenient and I did not have any difficulty in utilizing it.”

Teacher 2 agreed, adding that:

“The feedback for teachers is what provides the opportunity of assessment and of monitoring students’ learning progress. ... As for the students’ feedback it is also useful to be available as it offers an additional learning opportunity to a student in a specific topic or question

indicated by the automated formative assessment. Meaning that the student receives the feedback when they reply to a question wrongfully. ... I would also add that the feedback to students is a good use of resources as it enables DALDIS to be used as a revision tool that students may use by themselves and to assess their level of knowledge prior to e.g., a final term exam”.

In the EFL Department, Teacher 3 felt that:

“... the feedback for the teacher may also be used in the classroom and offer a learning opportunity for the whole class. Even students who replied correctly might have done it by chance or by adopting a wrong though process even if that leads them again by chance to the correct answer.”

Teacher Dashboard For this group of DP capable professionals, the Teacher Dashboard was an important feature and used extensively to gather information about their pupils. The following teacher observations illustrate how the information reinforced crucial formative assessment strategies, not only using the information to find out how well students’ learning is progressing but also, as required, to adjust planning, preparation, and teaching in light of the feedback. Teacher 3’s comments set out her approach, saying:

“I used the teacher dashboard to monitor the progress of my students and the effectiveness of my teaching. This was achieved of course, through the interpretation of the outcomes that were presented through the dashboard. For example, if there was a question were students massively failed to answer correctly then this should be reflected in designing this specific lesson next year and of course go back to that part with students and try to achieve the learning goal more effectively. The same goes for the questions that there was a considerable percentage of students that did not reply correctly, which led to the class revising that specific part.”

Teacher 1 added:

“With the dashboard this becomes a shared responsibility of the student and the teacher, thus, it important to have. ... I used it to see where there was a gap in students’ knowledge and would go back and refer to that point in the next lesson in school. There was also the possibility of more targeted data per student, but I mainly used the classroom data.”

Teacher 3 pointed out how she used DALDIS/JCQuest:

“... another thing to be able to see exactly where advanced students successful and where struggling students were need more support.”

A further comment from Teacher 1 revealed the Teacher Dashboard:

“...it is valuable to know where exactly possible knowledge gaps have been identified as this offers and opportunity of focused intervention by the teacher to ensure that the learning objectives will be met.”

The Teacher Dashboard was also raised by Teachers 1 & 3 in a later part of the interviews when asked about DALDIS/JCQuest features that stand out. Teacher 3 commented:

“I think the dashboard is one resource that stands out. I mean that without being able to view students’ achievements a big proportion of the capabilities DALDIS has would not be feasible. Furthermore, formative assessment would not be possible without feedback to the teacher.”

Teacher 1 confirmed:

“I agree, and the way that these data is represented is of big importance. ... The way the data is represented is one that would make sense and is adequate to pass down the information to the teacher.”

Benefits of using DALDIS/JCQuest for Teaching and Learning

Discussions with teachers revealed a number of benefits from using DALDIS/JCQuest to support teaching, learning and formative assessment, chief among them being curriculum alignment, ease of use as well as variation and complementarity.

Curriculum Alignment Because teachers themselves had been involved in the creation of the content for DALDIS it was noted how this gave them the opportunity to address their own specific teaching needs in accordance with national curriculum guidelines:

“As it was designed by me, ... it was aligned with it and thus could address my teaching needs ... one of the major things to be taken under consideration as the only possible way to

integrate DALDIS into the teaching practice is to be in alignment with the national curriculum as time pressure minimizes the room for extra curricula activities.” Teacher 1

Extending this further Teacher 3 pointed out the valuable role that a technology-based system like DALDIS/JCQuest can play in supporting subjects where the national curriculum is less prescriptive:

“In English, you also must follow a national curriculum, but there is more freedom in choosing the books and method of doing it. This leaves more space for the use of technology and digital tools. ... the development of the content for the English has been done based on this curriculum. Therefore, the answer is yes, the material was aligned with the curriculum.”

Ease of Use As with the students, the teachers agree that DALDIS/JCQuest was easy to use. After Teacher 2 had explained that ease of use was a positive feature, Teacher 1 pointed out that having to pivot to remote online learning during the pandemic provided her with additional skills that she did not have beforehand.

“I found the system relatively easy to use and did not have any problems both when engaging my students with the platform and directing them to the correct content as well as to using the dashboard to see how my students did.” Teacher 2

“That was the case for me as well. I think before the COVID-19 pandemic I would need some time to familiarize with the system or at least think I need, more maybe an issue of confidence. Following the pandemic, the online learning and the use of multiple digital tools and platforms, I was able to use the system with confidence and did not encounter any, worthy to report, problems. Some minor technical issues were discussed in a previous question.” Teacher 1

Variation and Complementarity An important part of the questions addressed to the teachers concerned their experiences with the use of the DALDIS/JCQuest application in working with students. In particular teachers appreciated the variety of question types offered by the platform and how it could be used as a homework and exam revision tool to complement students classroom learning. As Teacher 3 explained, *“I would say that the types of questions available are the types of questions one would expect from such a platform.”* This was confirmed by Teacher 2 who added, “...

the question types available were sufficient for me to be able to make a good use of it as a homework and/or revision activity.” For future iterations Teacher 1 suggested the incorporation of more “open-ended questions (short text) to be marked by the teacher” so that “ the teacher chooses if he/she wants to use such questions.”

It was also noted how DALDIS/JCQuest added variety to the learning process as the use of technology represented a break from the more traditional learning approach, thereby made the learning process more attractive for students. Furthermore, because the materials fully aligned with the curriculum, the resource complemented much of the material covered in class:

“Based on the feedback I got from them and my observations when used in classroom, it is for them a nice break from the more traditional learning activities that usually take place in the class. It also seems to be a more attractive final revision tool than going through e-book exercises. They also seem to enjoy and participate in the activity relating to reviewing the class results with the whole classroom and commenting on the correct answers and emphasizing on why this is the correct answer.” Teacher 3

“I think they benefited from the materials as they were designed in such a way as to be complementary to what was done in the classroom. And by that, I mean that they were representative and linked to all the learning objectives of the lesson and in complete alignment to the national curriculum which is what dictates the subject and lesson curriculum.” Teacher 1

Chapter Five

Conclusion

This case study has reported on the findings of the implementation of the DALDIS project in one large school in Greece based on a pilot study conducted with 50 students and four of their teachers. These were experienced and well established teachers, all of whom were involved in creating lesson units/question sets for the DALDIS project as appropriate to the Greek curriculum for Science, Biology and Modern Foreign Language (MFL) learning which in this case is English. Both students and teachers participating in the evaluation through surveys and interviews rated the DALDIS/JCQuest application very positively, especially when it came to ease of use, its usefulness as a homework and revision support tool and the learning benefits associated with timely and good quality feedback.

Students in particular rated the learning questions with feedback very highly with 79% agreeing that this was their preferred question type. They valued the feedback provided in response to their answers with 88% reporting that it helped them correct their mistakes and understand where they went wrong. This is important as research shows that inadequate feedback or poorly designed feedback (William, 2010) can have a negative impact on student learning. Of some concern however is the fact that students did not think that their overall learning had improved since using the resource. This requires further investigation but quite plausibly it may be due to the fact that students reported mainly using the resource at home for exam preparation and revision purposes or teacher assigned homework rather than in class. In this respect it could be argued that the system appeared to be used in a more summative rather than formative capacity and therefore its full functionality as an Assessment for Learning (AFL) resource was not fully utilised.

Most of the teachers thought the DALDIS/JCQuest online resources helped support learning and engaged their students. They all agreed that DALDIS helped their students understand and correct their own mistakes and the majority (75%) believed that the material aligned with the national curriculum. Most encouragingly, they also stated they made very good use of the teacher dashboard which helped them to monitor student progress and understand if classroom lessons were having the desired impact in terms of achieving learning outcomes.

While the teacher survey data and interviews indicated good awareness and appreciation of the importance of Assessment for Learning (AFL) it was interesting to see that three of the four teachers indicated a need for further training and professional development to enhance the integration of AFL into their regular classroom practice. This is not unusual as many researchers internationally have identified an urgent need for high quality, long term professional development to build teachers assessment capability and competencies (Lysaght and O' Leary, 2017; Trumbull & Lash, 2013) so that AFL can be fully implemented. Given this context, participation in DALDIS represents a start in this journey with all four teachers declaring that they now feel more confident using AFL to enhance classroom teaching because of the project and all agreeing that they see themselves continuing to use the DALDIS platform.

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DALDIS Project – Greece Report



William, D. & Black, P. (1998). Inside the Black Box: Raising Standards Through Classroom Assessment. Kings College, London.



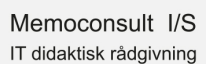
DALDIS(Digital Assessment for Learning informed by Data to motivate and incentivise students)

The DALDIS project comprising 8 partners will address open access e-assessment for learning through the application and dissemination of innovative assessment for learning techniques which are established in different curriculum contexts and then tested in schools in 6 European countries. Innovative data analysis processes will be applied to support learners and teachers, and to evaluate the most effective questioning and learning models. The project, based on Study Quest technology (www.study-quest.com), will drive student learning progression using well designed question sets and student feedback to help the student build their knowledge and understanding and support the investigation of key curriculum concepts. The key objective is to evaluate 'assessment for learning' (AFL) informed by feedback using digital technology in 6 countries with a focus on Science teaching and learning (Physics, Chemistry, Biology and Earth Science), and modern foreign language (through the teaching of English and French) in years 11 through 18.

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