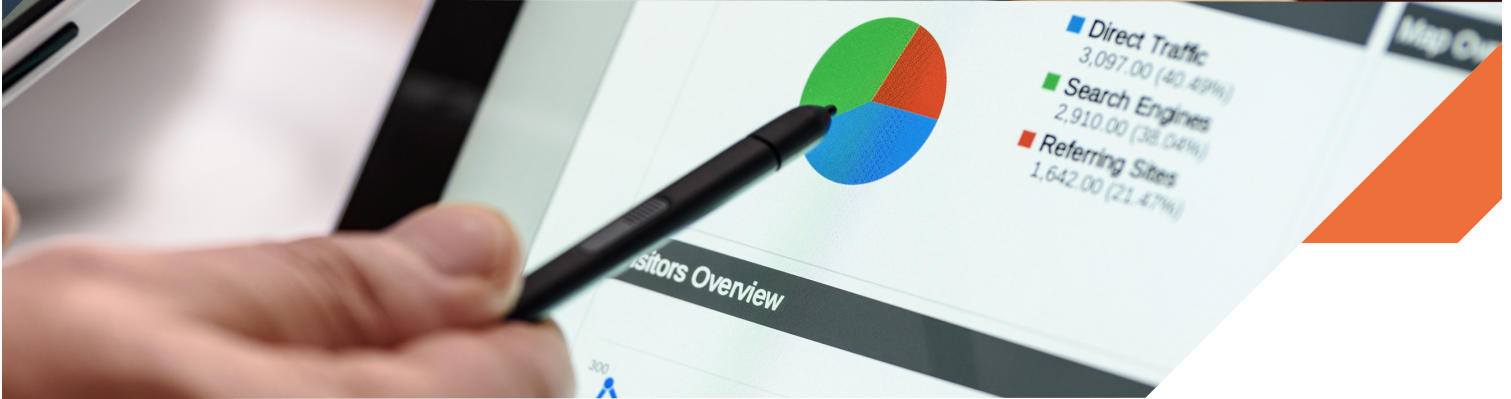




Digital Assessment for Learning informed by Data
to motivate and Incentivise Students



DALDIS

TURKEY RESEARCH CASE STUDY

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

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DALDIS Turkey Case Study (2022)

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Executive Summary

DALDIS (www.daldis.eu) is a 3 year Erasmus+ Project (2019-2022), involving eight partners from five European countries, which aimed to explore the potential of digital technologies for *Assessment for Learning (AFL) or Formative Assessment (FA)*. The application, which was developed and tested as part of the project is designed for Science and Modern Foreign Language (MFL) learning, which for most partners meant English language learning (EFL). It has been adapted to the national core curricula, with the aim of providing feedback to students on their progress and help them understand their mistakes while also helping the teacher to analyse students' needs and preferences, potentially encouraging learning personalisation. The key feature of the tool is the design of precise feedback for the tasks faced by the student. 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.

This case study presents the results from research on the use of the DALDIS/JCQuest application in twelve Turkish schools. Five types of schools took part, including teachers and pupils from Primary, Junior High and High Schools, together with private Junior High Schools and Special Schools. Overall, the results suggest a positive perception by teachers and students of the DALDIS/JCQuest system. The teachers involved in the study appreciated the system's effectiveness in increasing student engagement and motivation to learn. In addition, there were positive comments regarding the value of Assessment for Learning (AfL) and some critical observations about the need for better technical support to integrate AfL in their classrooms fully.

In Turkey, the compulsory education cycle consists of three stages, each lasting four academic years: primary (1st to 4th grade), secondary (5th to 8th grade) and high school (9th to 12th grade). Since the class range of the DALDIS/JCQuest project covered different school levels, the Science courses in Turkish on the platform were split along secondary and high school curricula. School size ranged from 25 to 1000 pupils in the schools with one very small school of 25 pupils in stark contrast to the three largest schools with 750, 850 and 1000 pupils each. The other three schools had 180, 350 and 400 pupils each. The teachers and students participating in the DALDIS/JCQuest project represented grade ranges across private and public schools.

A questionnaire survey was used to collect data from nine teachers who participated in the study, eight female and one male, with seven teachers from schools in cities and two in urban towns. Eight teachers taught in mixed schools, and one taught in a female-only school. In addition to completing questionnaires, seven teachers also participated in semi-structured interviews that sought to delve deeper into their experience and opinions about using the DALDIS/JCQuest system for teaching and learning.

Students taking part ranged from 5th to 10th grades, which covers both secondary and high school levels. Regarding gender, questionnaire participants were evenly balanced, as 53% were female and 47% were male. The majority of users (51%) were in the age bracket of 12-14 years old, 15-17 years old accounted for just over 30%, and the 9-11 years old bracket was relatively small at 19%. The most significant number of respondents were from Second Year Junior High School (32%).

A pre-pilot phase in Turkey started at the end of December and ran through most of January and February. The pilot phase commenced in March 2022, with 544 pilot users. In the main project, a total of 785 users completed over 1600 sessions – an average of just over two sessions per user. The high number of pages for each session (30.84 pages/session) and the long average session duration of 14.25 minutes show high-quality usage, indicating that in most sessions, students completed at least one lesson/unit. Mobiles were the most utilised devices for accessing the platform, accounting for just over 62% of devices.

The overall impression is that DALDIS/JCQuest was positively received, which is reflected by a desire from most students (76%) to continue using the resource in their school. Overall, the perception was favourable as over three-quarters of the students found the system very easy to use. Their active participation in the project was evident and DALDIS/JCQuest helped motivate them to learn. Although feedback style questions were ranked as the second favourite question type, additional survey questions on this topic revealed some weaknesses with only one third of students indicating they found them helpful. Students felt that more extensive explanations and greater clarity were required to help them understand where they went wrong. However, students participating in focus groups were less critical and more inclined to positively rate feedback. Nonetheless, given the widely reported and accepted importance of feedback highlighted in the literature by multiple

authors, the quality of feedback in the DALDIS/JCQuest Turkish system needs to be reviewed and investigated further.

Considering whether the system was beneficial for learning, it was observed by several students that this was particularly noticeable with students who would not normally engage with the traditional type of lesson. Alleviation of boredom was a theme mentioned several times by students, the use of new tools and materials seems more attractive to students. All considered, DALDIS/JCQuest resources helped to support learning, and the majority used the platform frequently (at least every two weeks).

Most of the teachers have extensive professional experience in teaching and the results suggest that participating in the DALDIS project was a positive experience. In particular teachers appreciated the system's effectiveness in increasing student engagement and motivation to learn. From the interviews, it was clear that those teachers who took part were open to new ideas, found the system easy to use and were quite comfortable and interested in using technology to teach. Most teachers used the DALDIS/JCQuest resources in class and as homework for their students. Furthermore, almost all agreed that their schools were well-resourced and that their schools encouraged teachers to use technology to support and enhance their teaching and learning.

Teachers had a broad perspective on assessment seeing it as a way to communicate with students, identify their strengths and encourage them to develop their learning. While all of the teachers felt that technology helps teachers monitor student progress, most of the respondents did not regularly use technology for assessment prior to DALDIS. In addition, there were positive comments regarding the value of AfL and some critical observations about the need for better support to integrate AfL in their classrooms. While teachers seem keen to use AfL strategies that support them in their teaching, several challenges create barriers to implementation, in particular, the lack of time which was raised as a source of concern by many. Successfully implementing AfL is a challenge throughout the education system, and, as is the case here, a common barrier is finding the time to implement the strategies in class. Furthermore, preparing students for external examination means that some teachers focus on this aspect of teaching, leaving little time for other forms of assessment.

Like their students, teachers were also quizzed on the benefits of feedback both in the survey and the research interviews. The consensus was that feedback was constructive. Most teachers regarded the

provision of feedback as the most important feature of DALDIS/JCQuest, and it is important to note that the majority believe that feedback in general helps students understand the content and correct their mistakes. However, there is a need for training and further professional development to help teachers provide more efficacious feedback in their daily teaching and learning.

Most teachers reported that students predominantly used the DALDIS/JCQuest system at school rather than at home. The majority indicated that they made good use of the dashboard to check their students' progress. However, less than half of respondents (45%) felt that the Turkish materials were well aligned with the curriculum, with a similar number expressing uncertainty, and just one teacher strongly disagreeing.

Most teachers believed that an automated assessment system like DALDIS/JCQuest makes regular, ongoing assessment easier as it reduces the amount of teacher time required for assessing. Interestingly, interviewees commented that technology can place teachers in the role of a learner alongside their students, revealing a change from their traditional role as the individual with all the answers. Similarly, teacher motivation and enjoyment in the project were very evident from the interviews. These findings indicate that there is a necessity for professional development and time to practice to improve confidence and expertise in using technology to support and enhance their teaching. Having sufficient time to get to know the system and practice is critical to success and sustained use.

Finally, teachers believe that DALDIS/JCQuest helped students become more independent learners, and one of the successful benefits of the system for those students who were eager to learn is that it improved motivation. Since participating in the project, most teachers are more confident in using AfL to enhance their classroom teaching practices. They feel more confident about using technology to support student assessment, and most have a greater appreciation of the potential benefits that technology can bring to the assessment process. All teachers agreed that technical difficulties might hinder teaching with technology in schools. According to the teachers, these issues can be particularly significant in state schools where lack of technical equipment and access to the Internet may be limited. As one teacher remarked, *“Not every student has a mobile phone or tablet, and not all schools have computer classes.”* However, when asked to compare it with other technology platforms, all teachers gave resounding approval for the DALDIS/JCQuest system by comparison with other applications like Kahoot and Quizlet used in class.

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 **don't** 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.

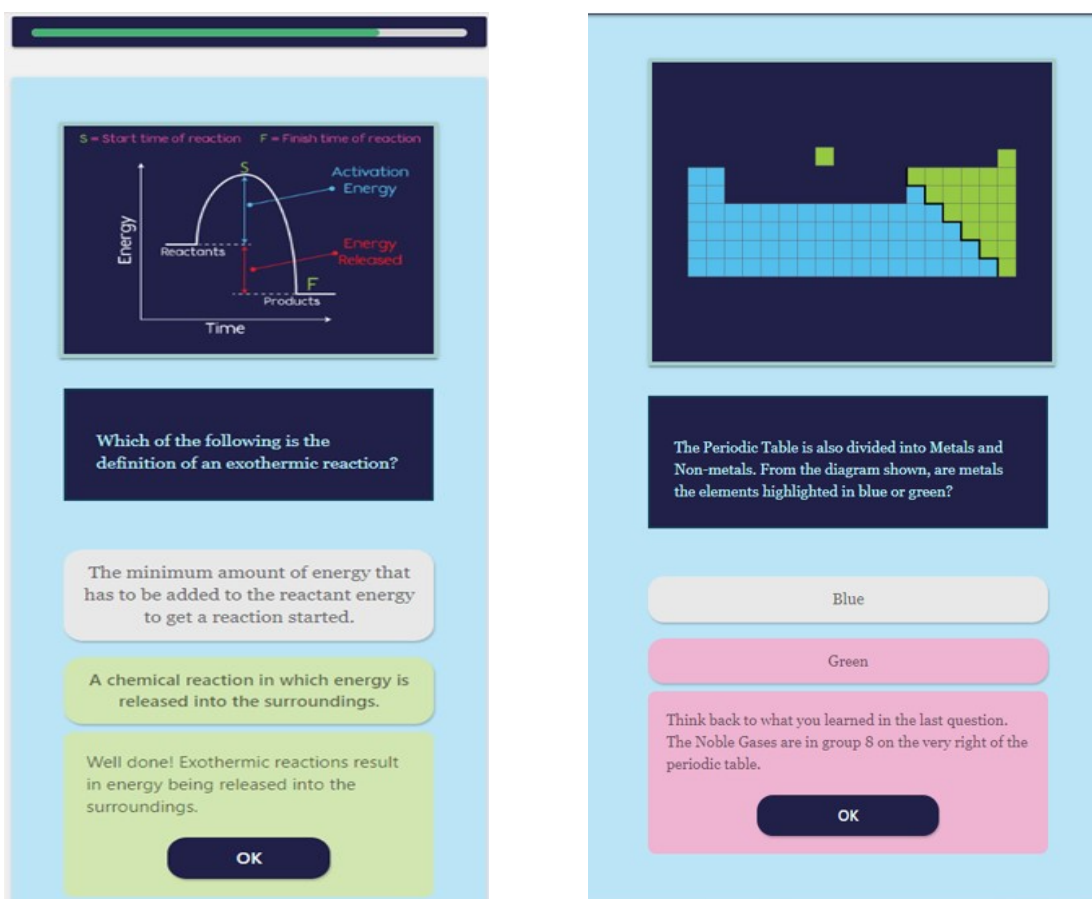


Figure 1. Feedback for RIGHT and WRONG answers Supports the student with positive 'nudges' in DALDIS

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. Targetting 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 e-Assessment 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 Turkey.

Chapter Two

Overview of Turkish Education System and the DALDIS Project Schools

Introduction

This case study reports on the overall implementation and evaluation of DALDIS/JCQuest in Turkey. To enhance context and understanding this chapter, Chapter Two, contains an overview of the Turkish education system, including its structure and provides information about the public and private school systems. It is followed by a system analytics data chapter detailing key indicators in relation to the geographic spread of users on the platform, the number of students availing of the DALDIS resources during the key pre-pilot and pilot project phases, as well as data on the most popular content and topics accessed and variety of devices used to access the system. This data is supplemented by Chapters Four and Five where research findings from students and teachers who participated in the research element of the project are presented. The final chapter, Chapter Six, comprises a discussion and summary of the project's results.

Background and Context

The Turkish compulsory education cycle consists of three stages, each lasting four academic years: primary (1st to 4th grade), secondary (5th to 8th grade) and high school (9th to 12th grade). The 2012 legislative reform extended compulsory education from 8 to 12 years (TÜBİTAK, 2004). Turkish students receive 30 hours of lessons weekly in secondary school and 40 hours weekly in high school. Eighth-grade students choose their path for high school based on their achievements in the nationwide aptitude–achievement exam called LGS. Their choices will determine the content of their high school education, which they will start when they are 14 years of age.

High school education is divided into two paths: traditional high school and vocational-technical high school. High schools include project schools, Anatolian high schools, science high schools, religious high schools (Imam Hatip), sports high schools and Anatolian fine arts high schools. Private schools in each category of high school offer the same curriculum as public schools but, in addition, have extra lessons/classes or skill development programs such as language education,

science and art classes, and international diploma and student exchange programs. Students taking part in DALDIS/JCQuest, range from 5th to 10th grades, which covers both secondary and high school levels in the Turkish educational system. The teachers and students who participated in the DALDIS/JCQuest project who were invited to the focus interviews represent grade ranges across private and public schools.

DALDIS/JCQuest Curriculum Subjects

Science lessons in the Turkish secondary school curriculum are taught in a single branch field called Science and Technology between 5th and 8th grade. Science and Technology lessons are among the compulsory lessons taught for four hours per week in secondary schools in Turkey. Information Technologies is taught separately for two hours weekly starting from 5th grade and is considered complementary and supportive of science. Science lessons in the Turkish high school curriculum are taught in sub-branches such as Biology, Chemistry and Physics. In the first two years of all high school (9th and 10th grades), two hours of Biology, Physics and Chemistry each per week are compulsory (MoNE Board of Education and Discipline, 2021).

Foreign language lessons are among the compulsory lessons taught to both secondary and high school students. From 2nd grade, students study a foreign language, and English is the most common language taught. Secondary school students receive three hours weekly in a foreign language in the 5th and 6th grades and four lesson hours per week in the 7th and 8th grades. High school students receive four hours weekly in a foreign language and two hours weekly in a second foreign language. There are noticeable differences between the quality of English teaching in public and private schools. Whereas primary school students in public schools may only receive good quality English lessons when they start secondary school (5th grade), privately educated students start learning the language in kindergarten with fluent and well-qualified teachers.

Participating Schools

Information about the schools that participated in DALDIS is set out here:

- **Private Schools:** Private secondary and high school education institutions that provide education under the formal education curriculum, such as Doğa Schools.
- **Science and Art Centers Institution (BİLSEM):** BİLSEM was founded to educate gifted and talented children according to their talents. Intellectually gifted pupils (displaying an IQ of 130+) might also attend BİLSEM institutions. Gifted secondary school students may join



several interest clubs, also called enrichment, such as social work, photography, and chess, open to all students. Gifted students in general classrooms now have the right to take elective courses aligned with their field of interest. Elective courses contain lessons such as mind games and thinking education in which gifted students improve their thinking skills (Şahin, 2015).

- **MoNE Project Schools:** Project schools are determined by the Ministry of National Education and selected to participate in regional or international projects and activities. In determining these schools, the Ministry of National Education prefers to choose the schools with a high average success rate. There are about 200 schools with project school status throughout Turkey. For example, Çamlıca İHL, which took part in the interviews, is an İmam Hatip School and also a MoNE project school.
- **Vocational and Technical Anatolian High School (MTAL):** This is the general name given to all official vocational and art schools affiliated with the Ministry of National Education of Turkey. In line with the purposes of Turkish National Education, they are secondary education institutions that train intermediate staff to contribute to the country's economy and provide a profession at the end of 4 years of education, where students who have completed primary education can continue. Students complete internships in institutions and organisations for their vocational training during their education on certain days of the week.

Since the class range of the DALDIS/JCQuest project covers different school levels, the Science courses in Turkish on the DALDIS/JCQuest platform are split along secondary and high school curricula. The curricula are prepared in Turkish and English, taking into account the language proficiency of participating students from different schools. English content for secondary schools was also available.

Chapter Three

A Systems Data Perspective on the Implementation of DALDIS/JCQuest in Turkish Schools

As the systems data show the pre-pilot phase in Turkey started at the end of December and ran through most of January and February (Graph 1 below) with a short break that can be seen for the winter vacation which ran from January 22nd to February 6 in 2022. An impressive 8,000 page views were recorded within two weeks of the pre-pilot commencement. In total 235 pre-pilot phase users in Turkey completed 456 sessions and a total of 15,726 pages of the DALDIS/JCQuest question sets (Units/Lessons)

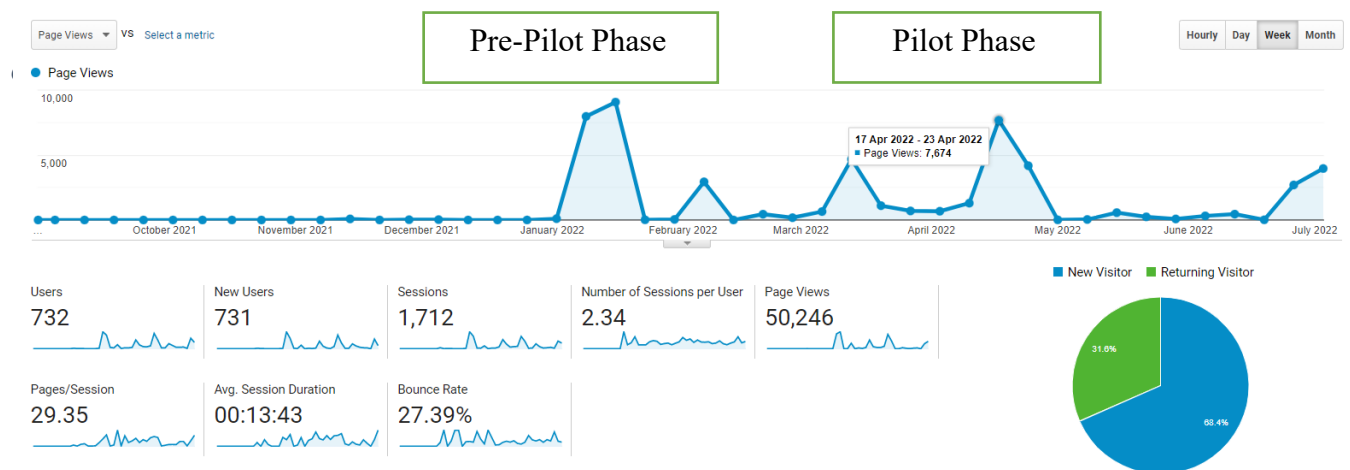


Figure 3.1 Pre-Pilot and Pilot Phase Usage of DALDIS/JCQuest

The Turkey Pilot began on schedule in March 2022, as seen in the graph above, before a drop in usage for the Spring Break from April 9th to 17th. Directly following the break, there was a total of 7,674 views in one week in Mid-April. In total, 544 pilot users in Turkey completed 1138 sessions and 31,190 pages of the DALDIS/JCQuest question set (Units/Lessons).

In Turkey, the Summer break was later than in other schools, and some extra pilot activity occurred up to July 10th. Some of the research questionnaires were completed during this period. All users from Turkey in the period from January 1st through July 7th, when the Turkey pilot period ended, are shown in table 1.

Region	Users	New Users	Sessions	Bounce Rate	Pages/ Session	Avg. Session Duration
Istanbul	439	425	897	23.75%	32.35	00:15:46
Ankara	92	72	206	24.76%	33.76	00:14:25
Zonguldak	77	44	176	43.75%	27.6	00:10:53
Duzce	67	58	157	27.39%	23.8	00:13:11
Kocaeli	28	22	67	23.88%	22.16	00:11:15
Eskisehir	19	12	23	43.48%	70	00:17:34
Bursa	18	15	25	28.00%	15.16	00:09:39
Canakkale	14	13	19	26.32%	13.37	00:05:18
Izmir	8	6	12	0.00%	60.83	00:22:55
Mugla	5	5	7	28.57%	24.29	00:09:02
Elazig	3	2	6	66.67%	5.83	00:02:40
Gaziantep	3	1	3	66.67%	1.67	00:00:11
(not set)	2	1	3	33.33%	27	00:06:54
Adana	2	1	2	50.00%	2	00:00:12
Antalya	2	2	2	100.00%	1	00:00:00
Konya	2	1	2	0.00%	87.5	00:16:42
Bolu	1	1	1	0.00%	12	00:03:22
Van	1	0	2	50.00%	17.5	00:08:26
Yalova	1	1	2	50.00%	7	00:02:03
Giresun	1	0	7	14.29%	53.86	00:43:03
Totals/Averages	785	682	1,619	26.99%	30.84	00:14:25

Table 3.2: Turkey Users by Region to July 2022

Google Analytics – User Information

A total of **785** users in that period did **1,619 sessions** – an average of **2.06** sessions per user. The high number of pages for each session (**30.84 pages/session**) and the long average session duration of **14.25 minutes** show high-quality usage, indicating that in most sessions, students complete at least one lesson/unit. This claim is supported by a relatively low bounce rate of 27%, which measures the number of users who exit the site after viewing only one page. For a content website, a bounce rate below 40% is considered to be high-quality use.

A total of **50 classrooms** were created in the DALDIS/JCQuest Turkey database between 5 January 2022 and 28th June 2022. In the period from January to July 2022 **1,757 units (lessons) were started by students and 1,566 finished – representing a positive 89.13% completion rate.**

Top Content used in Turkey

Page Usage The table below shows the top ten pages used in Turkey in the **Pilot period only (1 March to 7 July.)** This has been selected as the most representative period as lessons were still being finished and test usage by teachers was more common in the pre-pilot period.

Page Title	Page Views	Unique Page Views	Avg. Time on Page (Sec)	Entrances	Bounce Rate	% Exit
What is Cyber bullying?	1,314	878	26	17	76.47%	2.51%
Turkey DALDIS/JCQuest: Student Home page	1,108	568	18	232	8.62%	6.77%
English for Daily Life - Common Statements	1,094	882	30	9	66.67%	1.83%
Turkey DALDIS/JCQuest	954	464	78	148	24.32%	9.12%
Biology –How to program a healthy life	817	540	12	11	81.82%	1.96%
Biology – Sense Organs	806	655	40	10	70.00%	2.73%
Turkey DALDIS/JCQuest Science – Student Home Page	744	278	41	25	64.00%	11.02%
Turkey DALDIS/JCQuest English -Student Home page	716	272	54	32	78.12%	15.64%
Chemistry – Chemical reactions	640	573	24	2	100.00%	1.25%
Physics – Constant speed motion	615	552	22	0	0.00%	0.16%
Totals/Averages	31,898	23,946	33	1,189	28.26%	3.73%

Table 3.3: Top ten pages from Pilot period 1st March to 7th July

These top ten pages represent **8,808 (27.6%) of the total 31,898** page views for the period of total pages. The DALDIS/JC Quest Student Homepage and main Homepage are highlighted in **Bold**

From the data it can be seen that users spent **an average of 33 seconds** on each page and together with **the 14-minute session** duration shown earlier in *Table 1* this shows positive use of the

materials. The **89% completion** rate deducted from the data sets as mentioned earlier is very positive for online learning materials.

Lessons The top lesson in the period with **1,314 total page views** is the “**Technology – What is Cyber Bullying?**” Unit. The Cyber Security course was a special course prepared by some Schools for the project. This was particularly pleasing for the lead teacher as earlier attempts, **pre-DALDIS**, to involve teachers in delivering this model based on traditional methods had been unsuccessful, whereas the online interaction built into the course via DALDIS spurred teachers on to engage more.

The second most-used lesson is **English for Daily Life – Common Statements**. This usage level is similar to what is experienced in DALDIS/JC Quest in Ireland where the equivalent “basic” or “getting-started” French vocabulary courses were also very popular when it came to Modern Foreign Language (MFL) learning.

The next two top lessons are **Biology; ‘How to Program a Healthy Life’, and ‘Sense Organs’** with over 800 page views each in the March to July Pilot Period. This is also similar to usage patterns in the other project countries. Chemistry - Chemical Reactions and Physics - Constant Speed Motion complete the most used lessons in the pilot period.

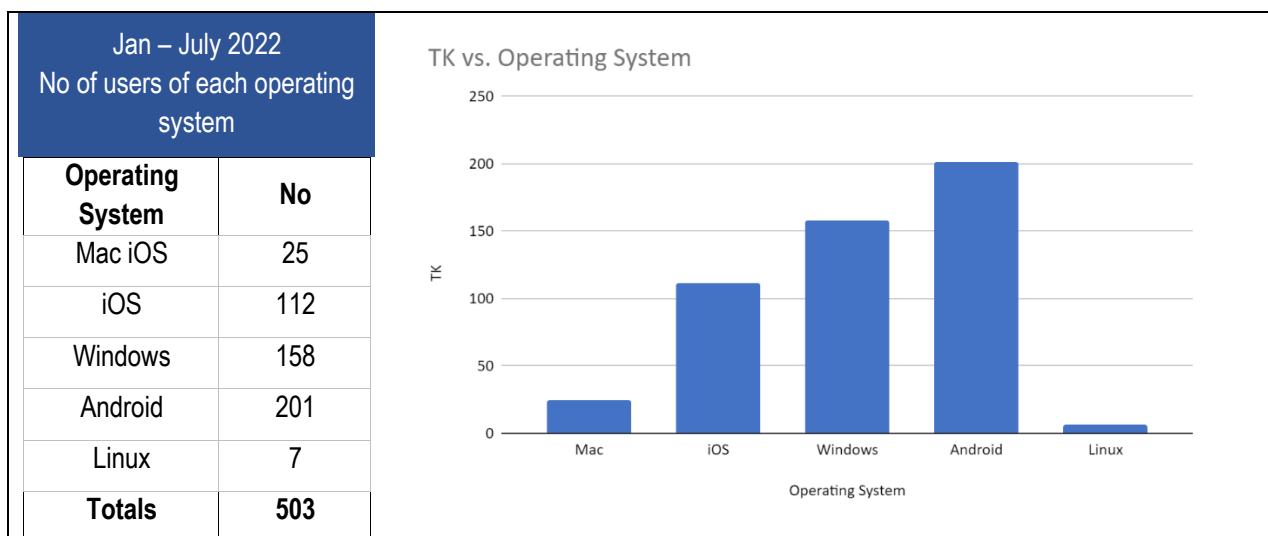


Table 3.3 Operating System Use

Devices and Operating Systems When it comes to understanding how students were accessing the DALDIS/JCQuest materials, Google Analytics provide some interesting insights into the various devices and operating systems used. From the data we can see that desktops/laptops windows devices outnumber Mac computers by a factor of over 6:1. It is clear however that **mobiles** are the most utilised devices for accessing the platform as they account for just over **62% of devices**. While it is not possible to discern which IOS and which Android devices are tablets or phones, based on user profile, the information separately gleaned from the student surveys (see next section) as well as DALDIS feedback from the Turkish project partners, it is safe to assume that the bulk of these were phones.

The pre-ponderance of less expensive windows computers and Android phones over Apple devices among the Turkish user base is likely reflective of prevailing economic conditions in Turkey. According to Eurostat Turkey's GDP per capita in 2020 was 64% of the European average, making it the seventh poorest among 37 European countries.

Chapter Four

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

Introduction

This chapter deals exclusively with the feedback data obtained from students in the 12 schools that were most closely involved in the implementation and testing of DALDIS/JCQuest in Turkey. These schools were distributed across different geographical and socio-economic areas of the country. Feedback was obtained via student and teacher surveys, student focus groups and in-depth research interviews with teachers during May to July 2022, towards the end of the project 's pilot phase.

The student questionnaire consisted of 19 questions (25 items) examining key experiential aspects of students interaction with DALDIS/JCQuest such as ease of use, usefulness of feedback, school and home usage, usefulness of feedback, preferred question types and the overall benefits of DALDIS/JCQuest as a learning tool. The survey was completed by 63 student (n=63), 40 of whom came from three schools with the remainder coming from the other nine schools.

The survey data was supplemented by focus groups interviews with 18 students (n=18) from seven schools that represented different geographical areas. Each focus group interviews lasted for 20 minutes approximately and consisted of one to five students per group. The focus groups provided an opportunity to explore aspects of DALDIS in more detail. Several themes emerged from the student focus groups including: ease of use, feedback, comparison with similar apps, motivation, gender differences, alleviation of boredom, the benefits, and some suggestions for improvements. In summary, from the students' perspectives, the DALDIS/JCQuest system was very well received.

Focus Group Participants

Focus Group	Age	School Type	Number of Students	Gender	Subjects
1	11-13	Secondary school	5	3M, 2 F	4 English 1 Science and English
2	12	High school	2	2M	Science
3	14	High school	2	2M	Science
4	11-13	High school	3	2M,1F	1 Science, Biology, Chemistry and Physics 1 Science 1 Chemistry, English, I.T
5	16	High school	4	4M	English, Science, I.T.
6	17	High school	1	1F	Science, Maths and English
7	14	High school	1	1M	English and Science

Table 4.1 Focus Group Participants

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.

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%

Key Demographics and Subject Data In terms of gender, questionnaire participants 53% were female and 47% male - an evenly balanced split between females and males. The majority of users (51%) were in the age bracket of 12-14 years old, 15-17 years old accounted for just over 30% and the 9-11 years old bracket was relatively small at 19%. The largest number of respondents were Second Year Junior High School (32%), followed by Third Year of Junior High School (16%). Less than 2% of the respondents were in the Fourth Year of High School.

In the focus groups, because of the gender differences (m=14, f=4) it was a little difficult to discern any differences due to the small number of females available to participate in the focus groups. However, it was notable that the two females from Focus group 1 preferred to work with the DALDIS/JCQuest system whereas the 3 males said “I couldn't see any difference between working on a DALDIS/JCQuest and studying on paper” and “I prefer to study by writing and drawing”, and I think it's the subjects that need to be studied more on paper”

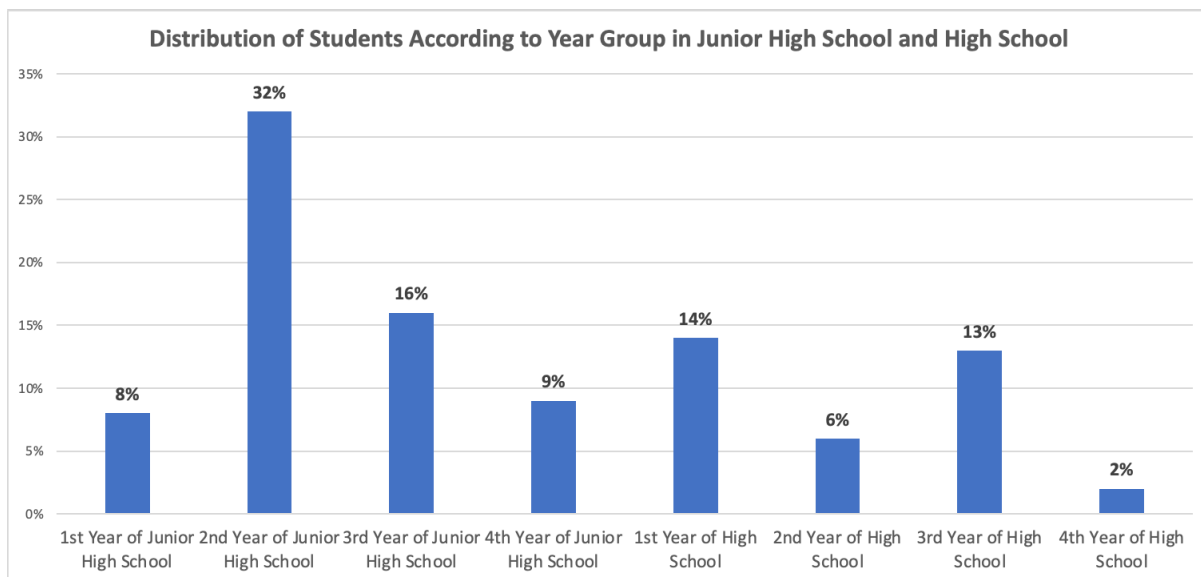


Figure 4.1 *Distribution of Students According to Year Group in Junior High School and High Schools*

Most Used Subjects and Combination of Subjects

In line with the objectives of the DALDIS project Science and Modern Foreign Language Learning (MFL) materials predominate student usage. Half of the students (49%) reported using the DALDIS/JCQuest material for Science alone or in combination with other subjects such as Chemistry, Physics, Biology and English. In generic terms the most frequently used subjects were English (39), Science (25) and Information Technologies (16). As separately used science subjects, Biology (13), Chemistry and Physics (11 each) were next, and Geography and French had just two each.

School and Home Usage

The data indicates similar patterns for school and home usage. Regular usage (defined as daily, weekly or every fortnight) amounted to 46% in school and 50% at home. Less regular usage (defined as once a month) amounted to 19% and 16% respectively. While 10% of students said they mainly

used the materials at home to help them revise for an upcoming test, approximately one third of respondents claimed seldom (once a term) or no usage (never) of the resource in school.

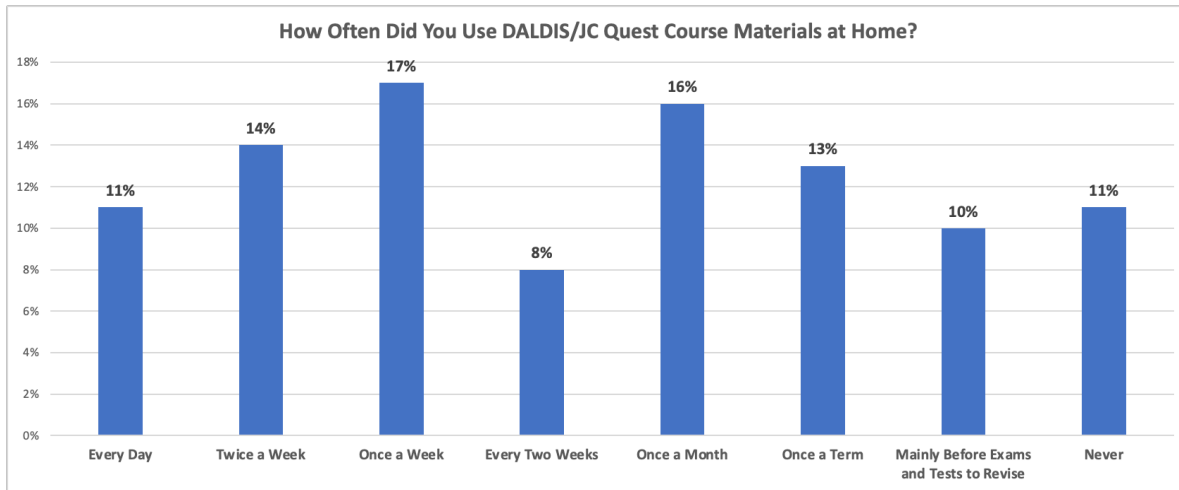


Figure 4.2. How Often Did You Use DALDIS/JCQuest Materials at Home?

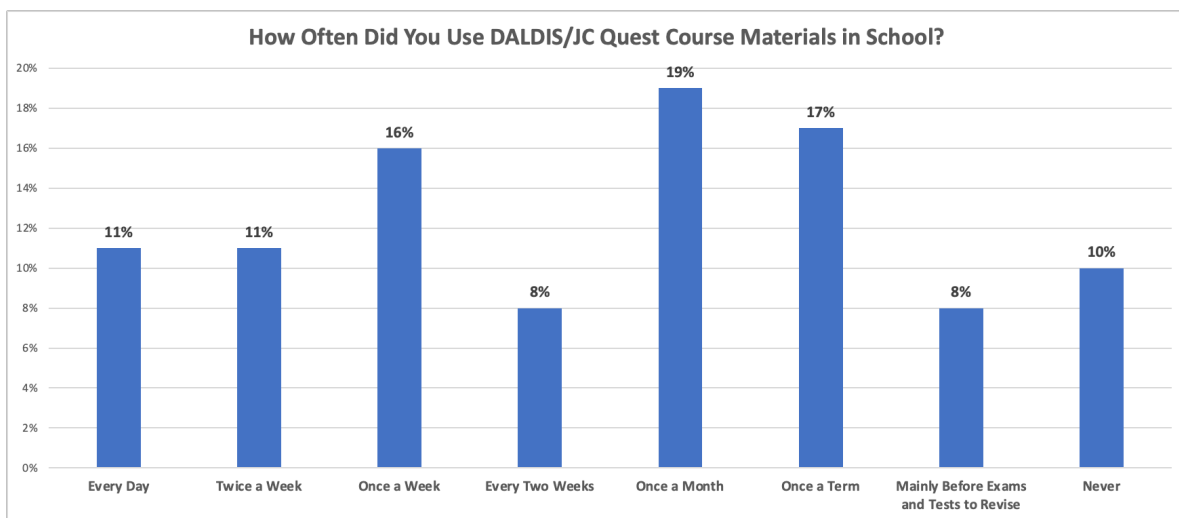


Figure 4.3 How Often Did You Use DALDIS/JCQuest Materials in School?

Ease of Use

Three-quarters of the students strongly agreed or agreed that the DALDIS/JCQuest system is easy to use. A small number of respondents (21%) were unsure and only just over 3% either strongly disagreed or strongly disagreed they found the system easy to use. Most students stated they found it very easy to use. For example, one participant from **Focus group 2** stated, “*It's pretty easy. Even those who have not used a computer before can solve the system in 10 minutes*”.

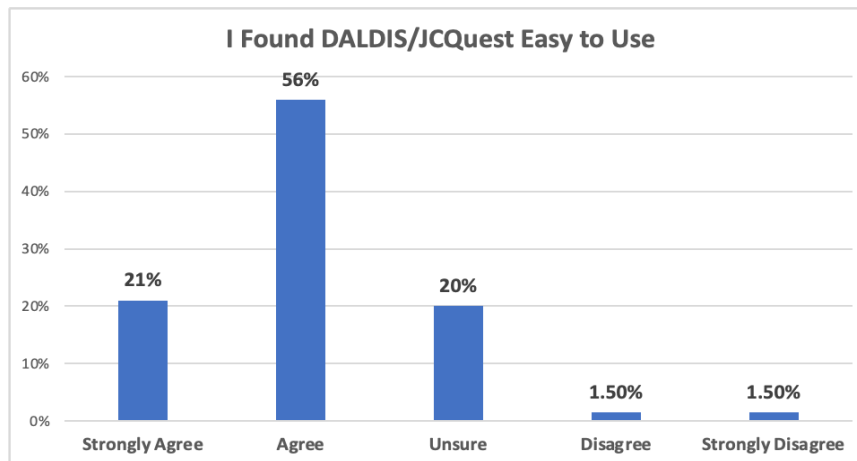


Figure 4.4 I Found DALDIS/JCQuest Easy to Use

Devices Used by Students

In Turkey, the majority used Android phones or iOS devices (iPad or iPhone) but it is not possible to know how many of the latter were iPhones or iPads. However, based on user profile and feedback from pupils and teachers, it is likely that the majority used phones. Overall, usage was approximately 50-50 between phone and other devices.

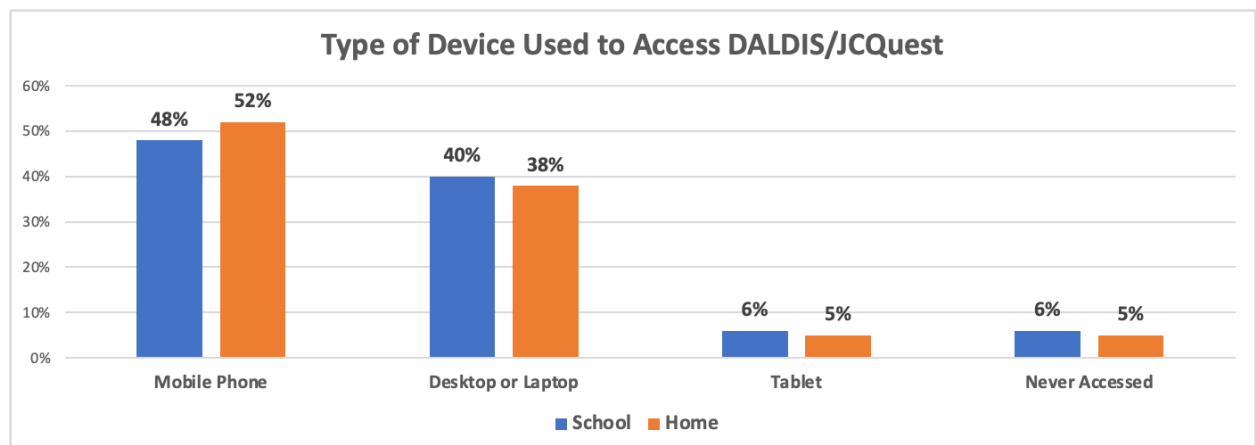


Figure 4.5 Type of Device Used to Access DALDIS/JCQuest

At school, mobile phones (48%) and laptops or desktop computers (40%) accounted for most of the devices used. Tablets were used in just a few cases (6%). At home, the pattern was much the same with over 52% of respondents using a mobile phone, 38% a laptop or desktop and nearly 5% a tablet. A few (5%) reported that they never accessed the platform at home or at school.

Use of DALDIS/JCQuest

Almost all students (90%) strongly agreed or agreed that they enjoyed using the DALDIS/JCQuest materials and a similar number said that the DALDIS/JCQuest materials helped them learn (92%), with a relatively small number of respondents (6%) indicating that they are not sure of its usefulness. In addition, most students (78%) strongly agree or agreed that the DALDIS/JCQuest materials helped them become more interested in the subject. However, a small number of respondents (17%) stated that they were unsure about this.

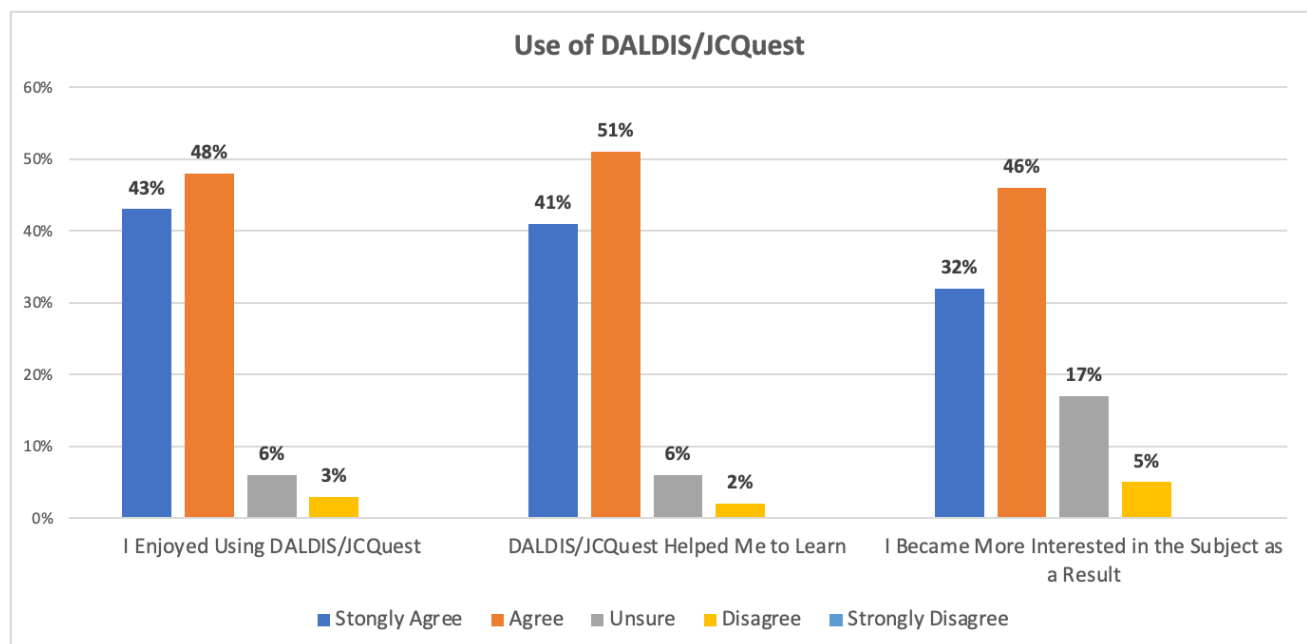


Figure 4.6 Use of DALDIS/JCQuest

Considering whether the system was beneficial for learning it was observed by several students that this was particularly noticeable with students who would not normally engage with the traditional type of lesson, with one student observing: *“Students who do not like the course can like the subjects more in this way. Because I think it has contributed more to those who learn with visual or technology.”*

Other students believed that those who learn using technology would benefit more as *“it was more beneficial for visual learners, there was a lot of matching and all that.”*

A student from **Focus group 7** agreed:

“I think that students who are interested in digital resources can benefit more. It also benefited those students who like to work individually or who are quieter and more reserved in the classroom”.

Feedback and Preferred Questions Type

Similar to other partner countries, Multiple Correct Answer Questions. i.e. where students were asked to choose more than one answer, was the preferred question type with 36% of student opting for this as their number one choice. The second favourite was Learning questions with feedback at 29%. A small number opted for matching - match with items questions (16%) and cloze questions filling the blanks (14%). Just a few respondents (5%) prefer categorise type questions - where they were required to put answers into categories.

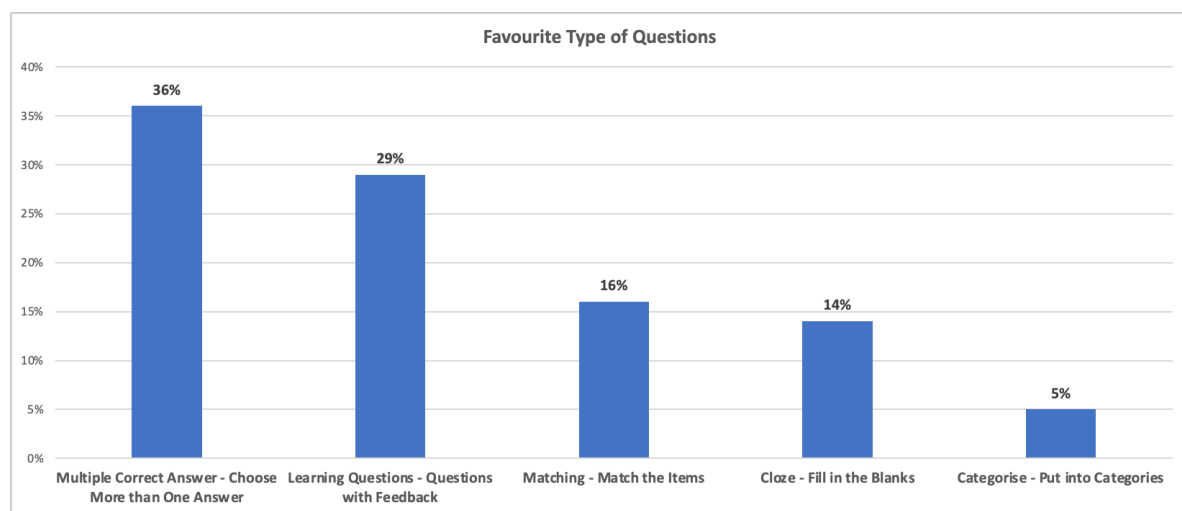


Figure 4.7 Favourite Type of Questions

Although feedback style questions were ranked as the second favourite question type, additional survey questions designed to probe the effectiveness of feedback for student learning received less favourable responses. The majority of students strongly disagreed or disagreed with the statement that the feedback questions were good (56%). Only one-third of the respondents strongly agreed or agreed that feedback questions were good while 11% stated that they were unsure. When asked if they learned more from questions with feedback, only one-third of the students strongly agreed or agreed, with the majority strongly disagreeing or disagreeing. Once again, a few said that they were unsure. A similar finding was gathered in the final two questions, where the majority of students (60%) did not find that feedback helped them understand where they went wrong (only 30% found that it did help), and 55% of respondents disagreed that their learning had improved since using DALDIS/JCQuest. Given the widely reported and accepted importance of feedback highlighted in the literature by multiple authors (see for example, Hattie & Timperley, 2007; Shute, 2008;

Hofenbeck, 2020; Dann, 2019; or Shepard, 2019) this is a concerning but consistent finding in this series of questions among students using the Turkish DALDIS/JCQuest materials.

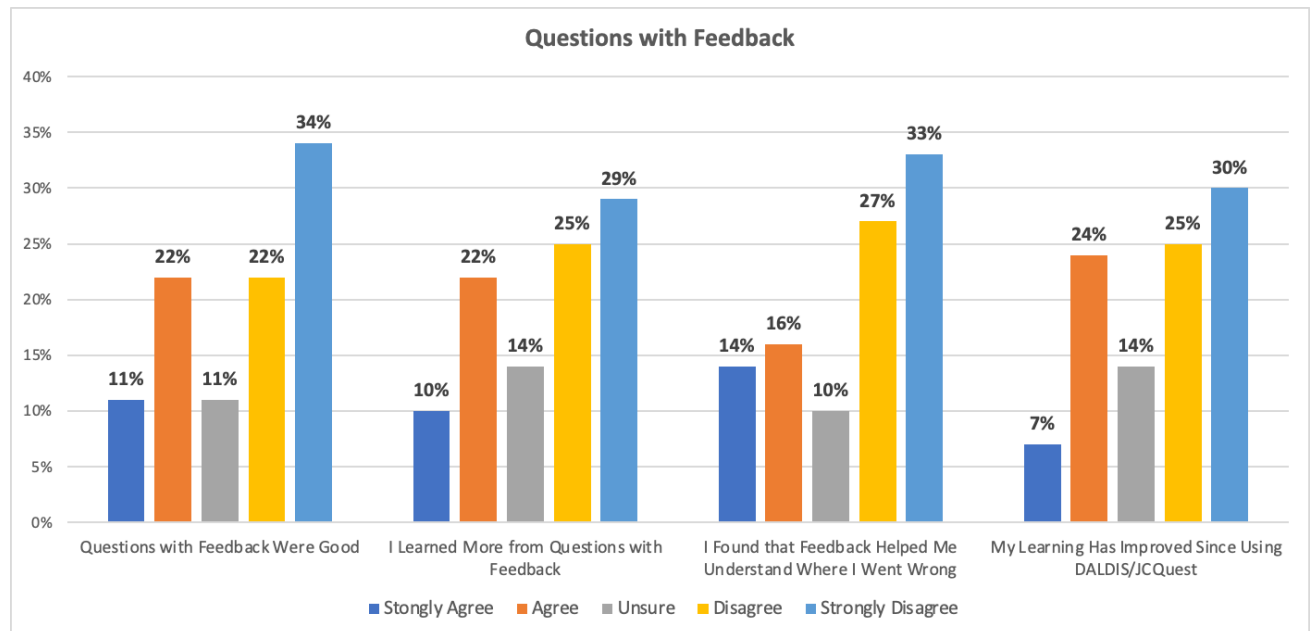


Figure 4.8 Questions with Feedback

As against this however it should be noted that students participating in the focus groups were more positively disposed to the benefit of the feedback provided by DALDIS/JCQuest with many believing it helped their learning. Opinions such as “*I think it's very useful because it helps me find the right the first time or the second time after the wrong*” or “*Worked for me, showed me my mistakes*”, perhaps reveal a more nuanced picture. Nonetheless, this contradictory evidence requires further investigation. In particular, the quality of the feedback needs to be reviewed as, when asked in a focus group what improvements could be made to DALDIS/JCQuest, opinions such as “*feedback given to the questions can be more explanatory,*” or “*feedback wasn't very good, could have been more descriptive. I did not find the feedback clear enough*” need to be addressed.

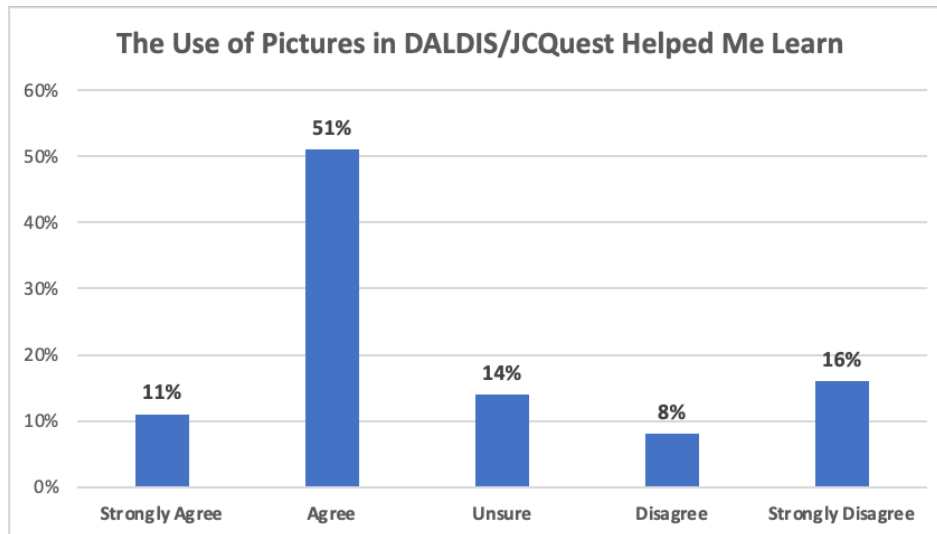


Figure 4.8 *The Use of Pictures in DALDIS/JCQuest Helped Me Learn*

The majority of students strongly agree or simply agree that using pictures helped them learn (62%). While 14% declared that they are not sure that using pictures helped them learn, 24% strongly disagree or disagree with the statement that using pictures helped them learn.

Additional Learning Benefits

The focus group discussions with students identified a number of additional learning benefits from the use of DALDIS/JCQuest. These include increased interest from students not normally engaged in class, the opportunity for learning using digital resources, its appeal to visual learners, alleviation of boredom, and enhanced motivation.

Considering whether the system was beneficial for learning it was observed by several students that this was particularly noticeable with students who would not normally engage with the traditional type of lesson. As one student observed *“Students who do not like the course can like the subjects more in this way. Because I think it has contributed more to those who learn with visual or technology.”* Other students believed that those who learn using technology would benefit more as *“it was more beneficial for visual learners, there was a lot of matching and all that.* A student from **Focus group 7** agreed *“I think that students who are interested in digital resources can benefit more. It also benefited those students who like to work individually or who are quieter and more reserved in the classroom”.*

Alleviation of boredom was a theme mentioned several times by the students. The use of new tools and materials seems more attractive for the students. For example, a student from **Focus group 3** when referring the DALDIS/JCQuest system said *“Stuff like this is always nice, class is always boring, people are bored.”* Another student said *“When we study all the time, we get bored after a while, such applications are enjoyable.”*

An interesting theme that emerged from the focus groups was the question of motivation to learn. Student motivation was expressed in a desire to participate in the learning process, although the approaches may differ. A student from **Focus group 2** said *“As I get over my mistakes and see that I am better, my motivation and self-confidence to work increase.”* From **Focus group 3** *“I like the matching activities, and I got a little more motivated because they were easy and I saw what I could do. It has helped me.”*

A student from **Focus group 4** described the extent of how his motivation to learn improved:

“... after solving physics and chemistry at DALDIS, I went and bought physics and chemistry books. I loved physics before, I saw that I was better at chemistry and physics with DALDIS and I was even more motivated towards the course and bought 12 books about physics. The questions there showed my interest and helped me learn the subject.”

Comparisons of DALDIS/JCQuest with other learning programs and apps that students were familiar with such as Kahoot, Dualingo, and Quizlett yielded mixed opinions. A student from **Focus group 1** thought the DALDIS/JCQuest system was *“less fun than other platforms such as Kahoot.”* The suggestion of the need more fun-like activities was also noticeable in the open-ended questions from the survey data on how the system could be improved especially for younger students. On the other hand, while several students thought the system was similar to Kahoot, a participant from **Focus group 4** stated *“Unlike Kahoot, I had a chance to learn more in DALDIS.”* Likewise a student from **Focus group 6** noted *“They are the same as DALDIS in question types but Kahoot has no feedback, but DALDIS JC Quest has feedback.”*

Suggestions for Improvements and Continued Use of DALDIS/JCQuest

When asked how DALDIS could be improved students provided a number of suggestions including the increased use of videos as well as additional lessons and more courses. A number of students

raised technical issues that emerged in relation to drag and drop and matching questions. These were particularly noticeable when students were using mobile phones. As one student noted, “*Questions with technical faults negatively affect progress on the platform.*” Others suggested a ‘like’ button should be included for students to evaluate the lesson because: “*When I like a lesson or test, I wish I could like it and recommend it to another fellow students*”. As noted earlier the theme of more fun activities was frequently mentioned with one student commenting “*The content can be made a little more fun to compete with apps like Kahoot*”.

Nonetheless, the overall impression is that DALDIS/JCQuest was positively received and this is reflected in the expressed desire of the majority of students, 76% of whom favoured the continued use of the resource in their school.

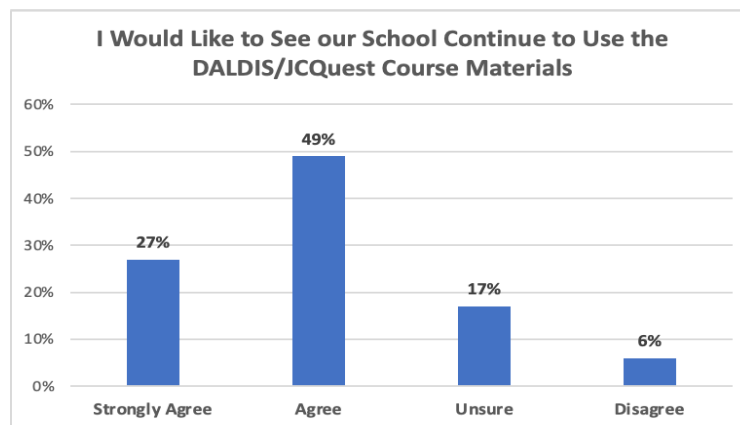


Figure 4.9. I Would Like to See our School Continue to Use the DALDIS/JCQuest Course Materials

This paper presented the results of using the DALDIS/JCQuest system in twelve Turkish schools. Overall, the results suggest a positive perception by teachers and students of the system. The teachers involved in the study appreciated the system’s effectiveness in increasing student engagement and motivation to learn. Nevertheless, most students would like their school to continue to use the DALDIS/JCQuest resource materials and would like to see them created for every school subject.

In conclusion, students involved in the project, found the system very easy to use, their perception was favourable and their active participation in the project was evident: DALDIS/JCQuest helped motivate them to learn.

Chapter Five

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

Introduction This chapter deals exclusively with the feedback data obtained from teachers in the 12 schools that were most closely involved in the implementation and testing of DALDIS/JCQuest in Turkey. These schools were distributed across different geographical and socio-economic areas of the country. Feedback was obtained via student and teacher surveys, student focus groups and in-depth research interviews with teachers during May to July 2022, towards the end of the project ‘s pilot phase.

As with students, teachers were also surveyed and interviewed to investigate how they used DALDIS/JCQuest to support learning, how beneficial they found it, as well as any issues or challenges encountered. Overall, the results suggest a positive perception by teachers as those involved in the study appreciated the system’s effectiveness in increasing student engagement and motivation to learn. In addition, there were positive comments regarding the value of formative assessment and some critical observations about the need for better support to integrate assessment for learning AfL in their classrooms.

Data Sources: Questionnaires A four-part questionnaire was used to collect data from nine teachers who took part in the study, eight female and one male. 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 and Part 4 focused on the teachers’ overall perceptions of the DALDIS/JCQuest system.

Interviews In addition to completing questionnaires, seven 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. Two of the teachers worked with gifted children. Several major themes emerged from analysis of the interview data, including: ease of use, the challenges of implementing

AfL and the importance of feedback, motivation to use technology, its usefulness and comparison of technological tools, the lack of time, and some suggestions for improvements to DALDIS/JCQuest

From the interviews, it was clear that those teachers who took part were open to new ideas, found the system easy to use and were quite comfortable and interested in using technology to teach. Most of the teachers used the DALDIS/JCQuest resources both in class and as homework for their students. While teachers seem keen to use (AfL) strategies that support them in their teaching practice there were several challenges which posed problems.

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.

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%

Key Demographic and Subject Data

Schools

Participants taught in 5 types of schools:

- 1 from a Non-fee paying Junior High school
- 2 from a Non-fee paying High School
- 3 from a Private Junior High School
- 2 from Special Schools
- 1 from a Non-fee paying Primary School

There were 8 female and 1 male teachers with seven teachers from schools in cities and two were in urban towns. Eight teachers taught in mixed schools and one respondent taught in a female only school. School size ranged from 25 to 1000 pupils in the schools with one very small school of 25 pupils in stark contrast to the three largest schools with 750, 850 and 1000 pupils each. The other three schools had 180, 350 and 400 pupils each.

Class size varied from less than 10 to more than 30 pupils per class, with four of the teachers reporting that their average class size was between 16 and 20 pupils.

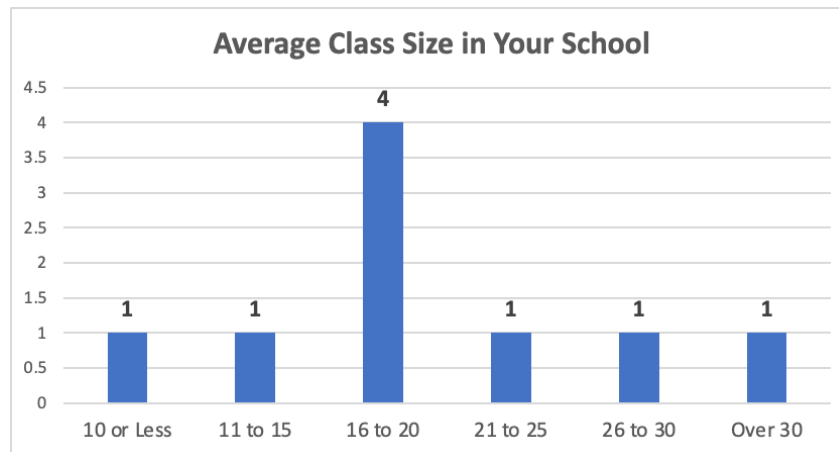


Figure 5.1 Average Class Size in Your School

Most of the teachers have extensive professional experience in teaching, which is illustrated in the chart below. Four of the respondents were aged 41-50, four aged 31-40, and one person indicated the age range between 20 and 30.

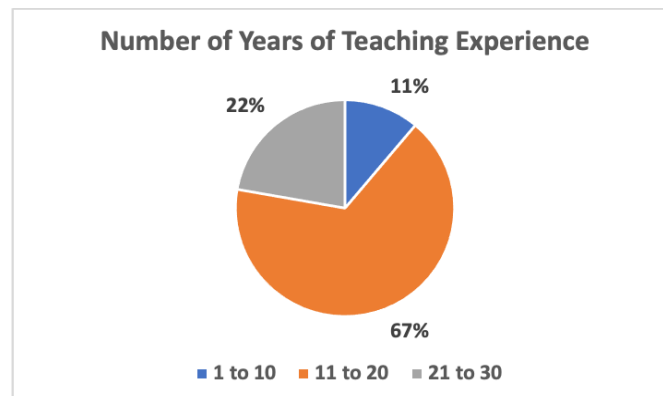


Figure 5.2 Number of Years Teaching Experience

There was quite a wide range in the age groups of pupils taking part in this research project. Five respondents taught 1st through to 4th years and another respondent taught 2nd year in Junior High School through to 4th year in High School. In terms of curriculum subjects, three respondents taught Science, three taught English, one taught Physics and another taught Information Technologies. One teacher taught quite a breadth of subjects including Turkish, Maths, Life Studies, Science, Arts, Music, P.E, and Social Studies.

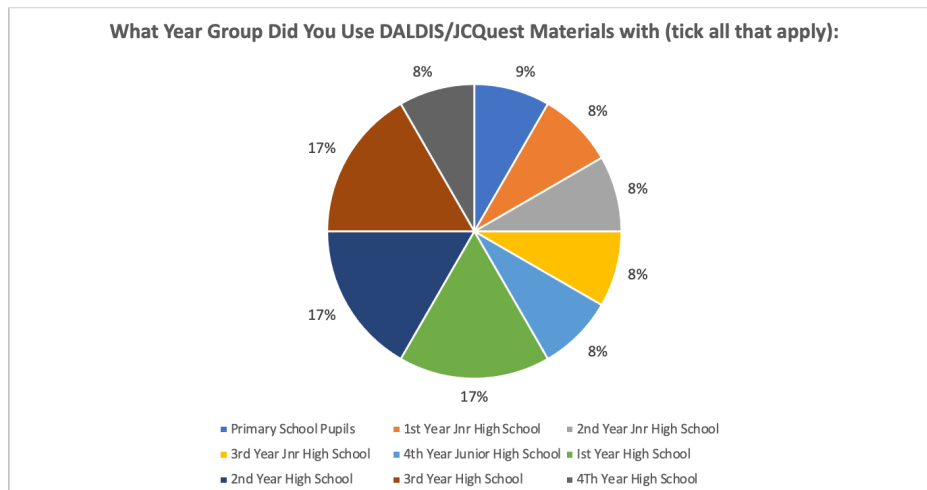


Figure 5.3 What Year Group Did You Use DALDIS/JCQuest Materials with ...

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, there is confidence in using technology, and the school encourages teachers to technology to support and enhance their teaching and learning. However, Teacher 1 described the problems that encountered in her school stating that, “We are a public school, so there may be technological limitations such as lack of tablets in our classroom.”

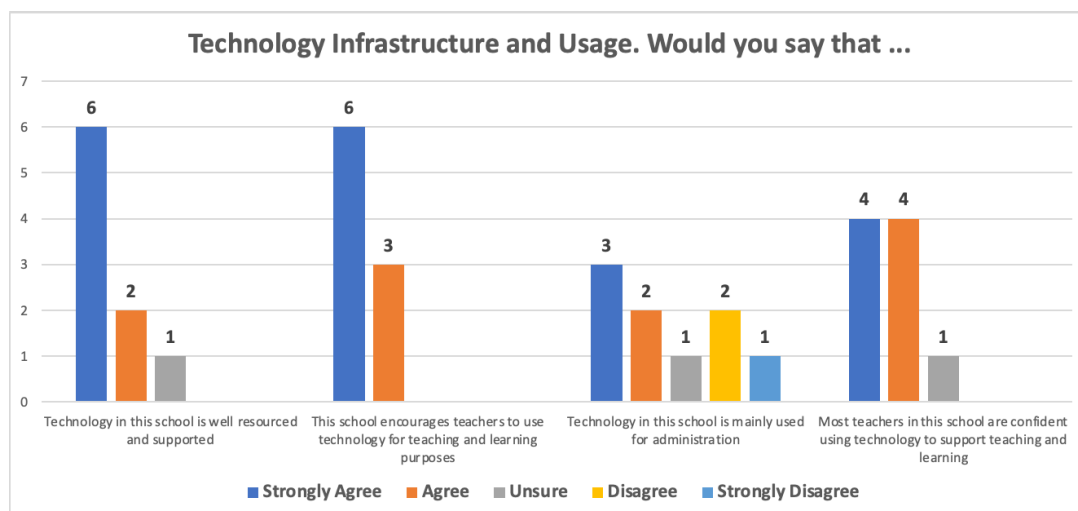


Figure 5.4 Technology Infrastructure and Usage. Would You Say that ...

Device Usage and Policy In terms of permission to use mobile phones in school, three respondents answered that mobile phones are allowed, four that mobile phones are allowed if the teacher permits it, and two respondents replied that mobile phones were never allowed.

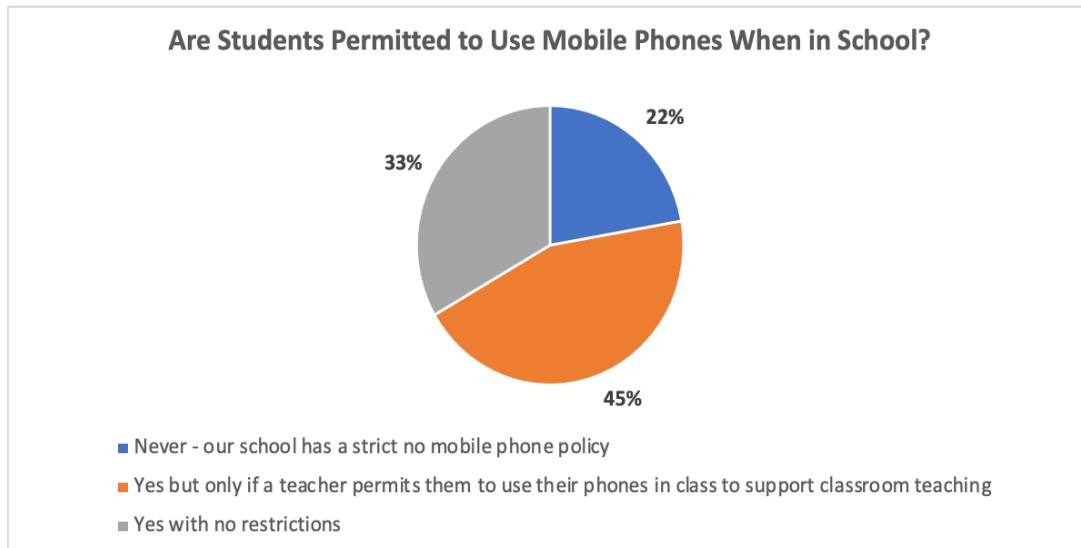


Figure 5.5 *Are Students Permitted to Use Mobile Phones in Your School*

In an assortment of combinations (laptops and mobiles, laptops and iPads, etc.), laptops and mobiles were the most typical devices used to access DALDIS/JCQuest. As more than one device is used in some schools, in the chart below the numbers refer to the how many schools use each category of device, for example, 7 of the schools used laptops and 7 schools used mobiles with only 2 schools using tablets.

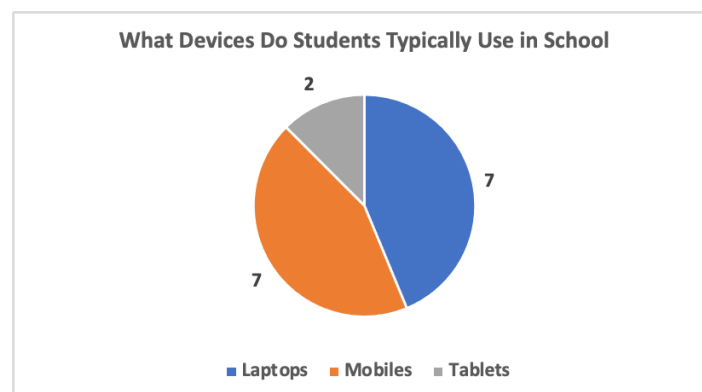


Figure 5.6 *What Devices Do Students Typically Use in School*

Teachers’ Own Use of Technology

There is a range of responses to questions relating to teachers’ confidence and belief in their own capabilities for using digital technologies in the classroom and outside of the classrooms, which is illustrated in the chart below. The majority teachers lack confidence and do not feel comfortable using technology in their teaching yet five teachers declared that they often use digital technologies to support the teaching and learning process in the classroom. Assessing whether they are considered by others to be very competent in using

digital technologies for teaching and learning again there was a split in the answers. While four people confirmed that others had such an opinion of their competence in school, five teachers disagreed or strongly disagreed with the notion that they should be considered an authority. Only four of the teachers said that they use technology a lot outside of school while the majority do not. These figures indicate that there is a necessity for professional development as well as time to practice in order to improve confidence and expertise in using technology to support and enhance their teaching.

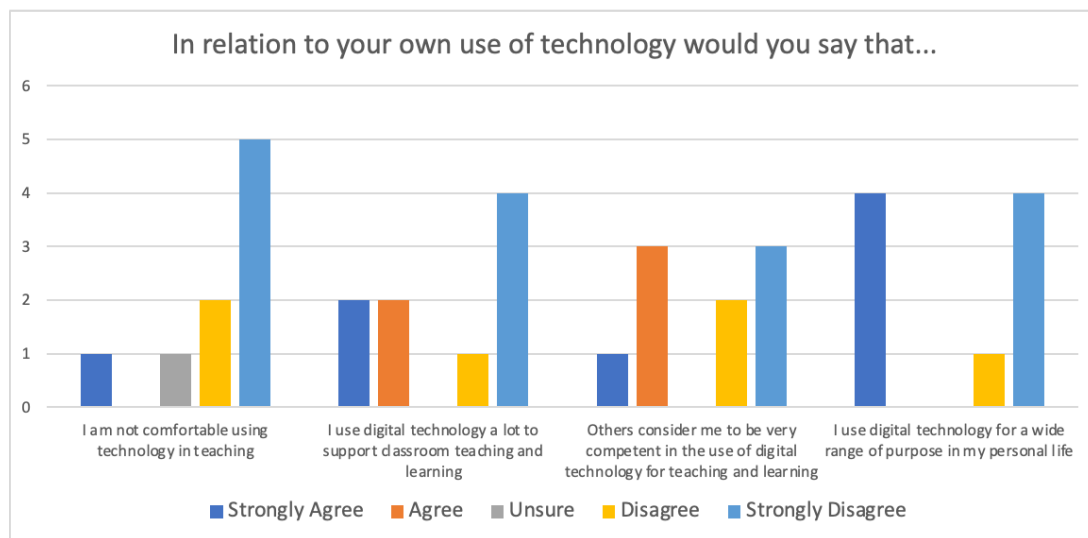


Figure 5.7 *In Relation to Your Own Use of Technology, Would You Say That ...*

When asked about the barriers faced in using technology, there were quite a range of responses with no singular theme emerging. The majority indicated that they would successfully use the technology if there was no one around to tell them what to do and had used a technology like DALDIS/JCQuest before. If they only had the manuals for reference, almost all (7) felt that they would be fine. When asked if they had used similar technologies before this one to do the same task that they could successfully use DALDIS/JCQuest and most agreed that they would be able to do so.

Help and Support As can be seen in the chart 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. As mentioned above, lack of time to get to know the system and practice is a key factor. 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. Just two respondents indicated that they would appreciate some initial assistance to get started. As is common with the implementation of technology initiatives throughout education, the majority of teachers said that they

would be more successful if they had sufficient time to complete the task for which the technology was provided. In a similar vein, when asked if the application had just the built-in help facility for assistance the replies were evenly split: three respondents didn't need such a facility but the others felt they would. Finally, when asked if someone showed them how to do it first, they would be successful, there as an even split in opinion: four teachers either strongly agreed or agreed with this statement and four either strongly disagreed or disagreed while one was unsure.

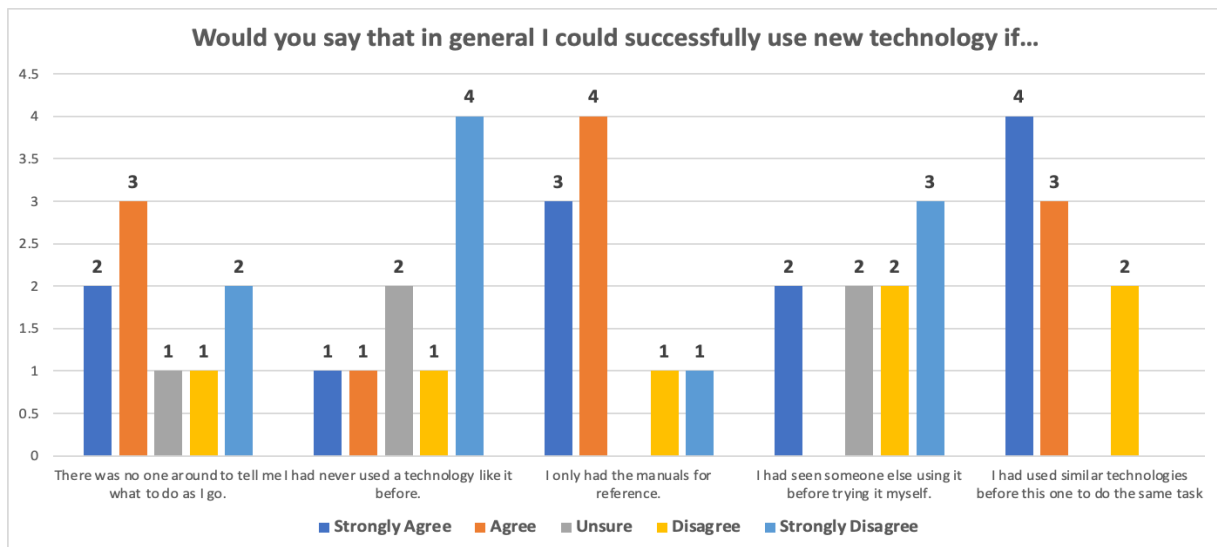


Figure 5.8 Would You Say that in General I Could Successfully Use New Technology if ...

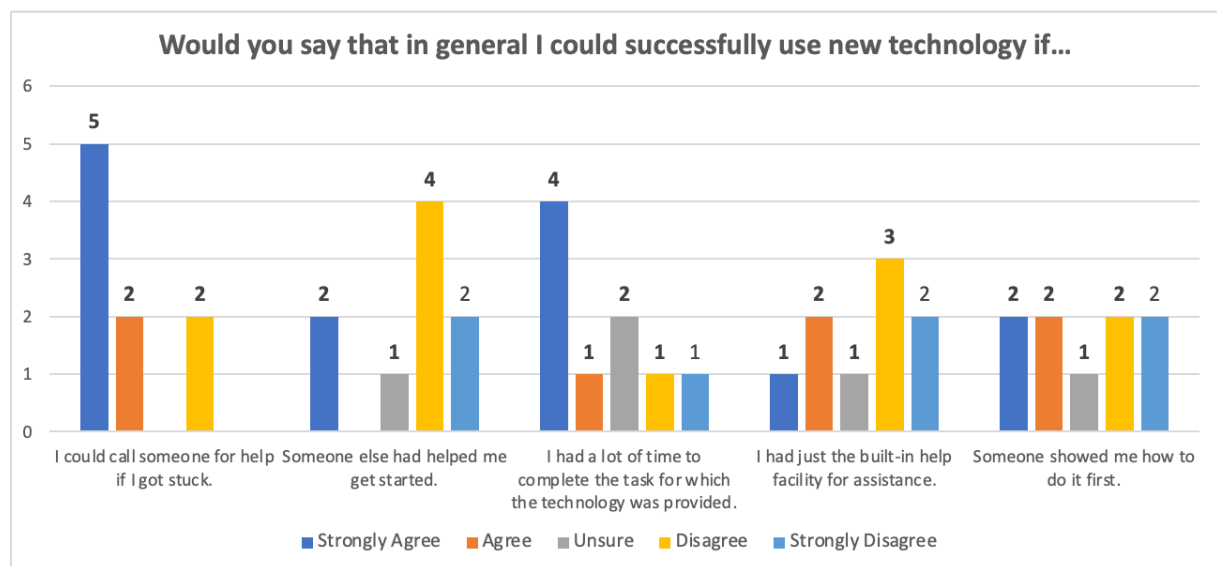


Figure 5.9 Would You Say that in General I Could Successfully Use New Technology if ...

Approaches to Assessments

Most of the respondents did not regularly use technology for assessment. For these teachers, student assessment is not only a tool for administration but, above all,

a way to communicate with students, identify their strengths and encourage them to develop their learning. This approach emphasizes the treatment of students as individuals and the most important participant in the educational process, in which the teacher plays the role of a “guide at the side” to help students improve their learning.

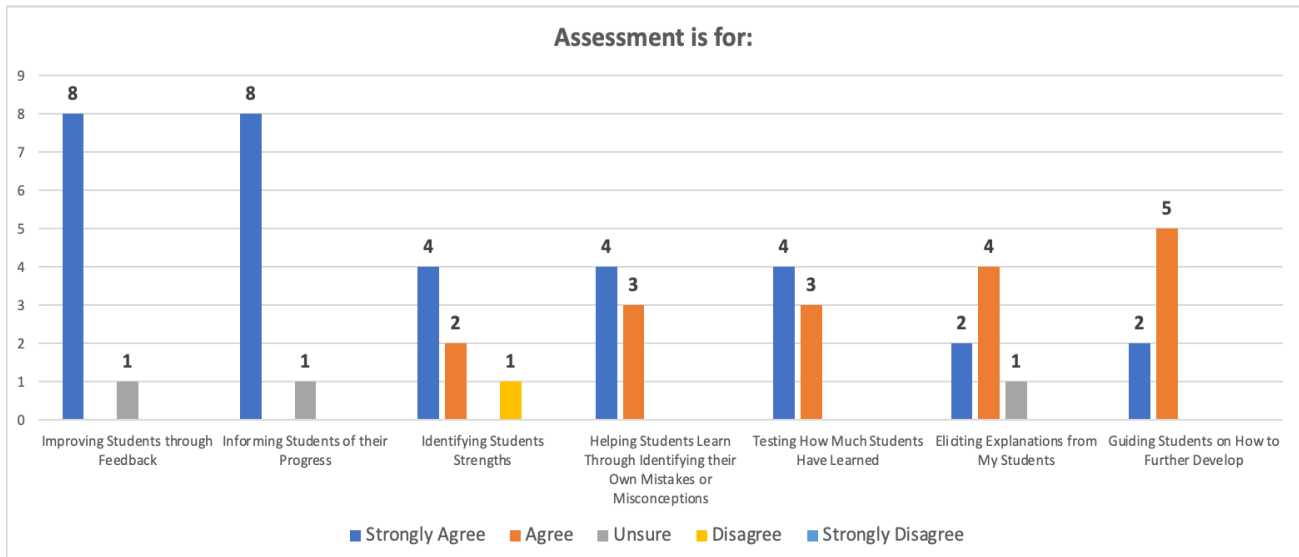


Figure 5.10 Assessment is for ...

1

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. Almost all teachers assessed students in class and only one assessed students outside of class i.e. homework

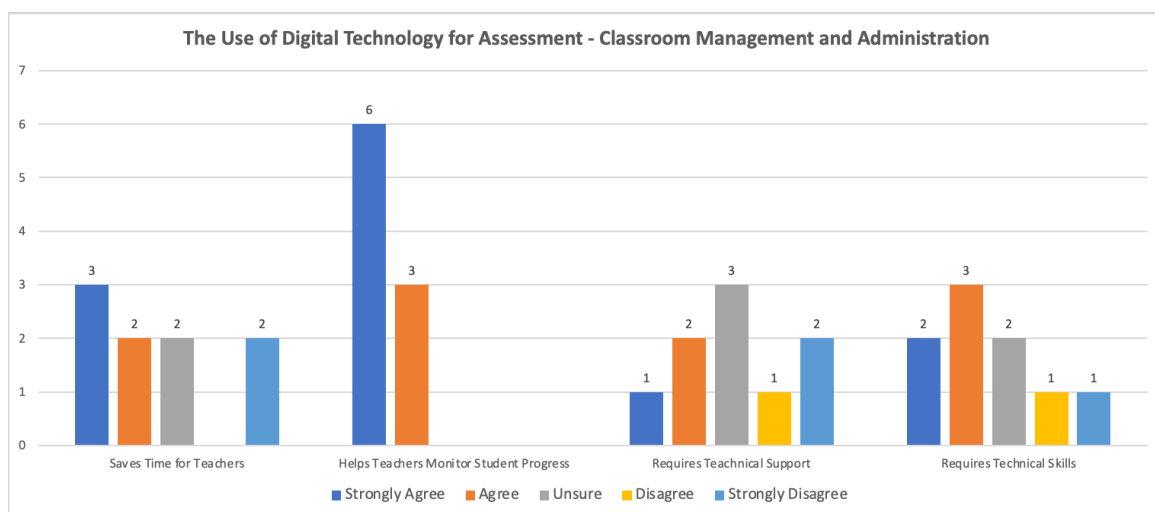


Figure 5.11 The Use of Digital Technology for Assessment – Classroom Management and Administration

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. 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.

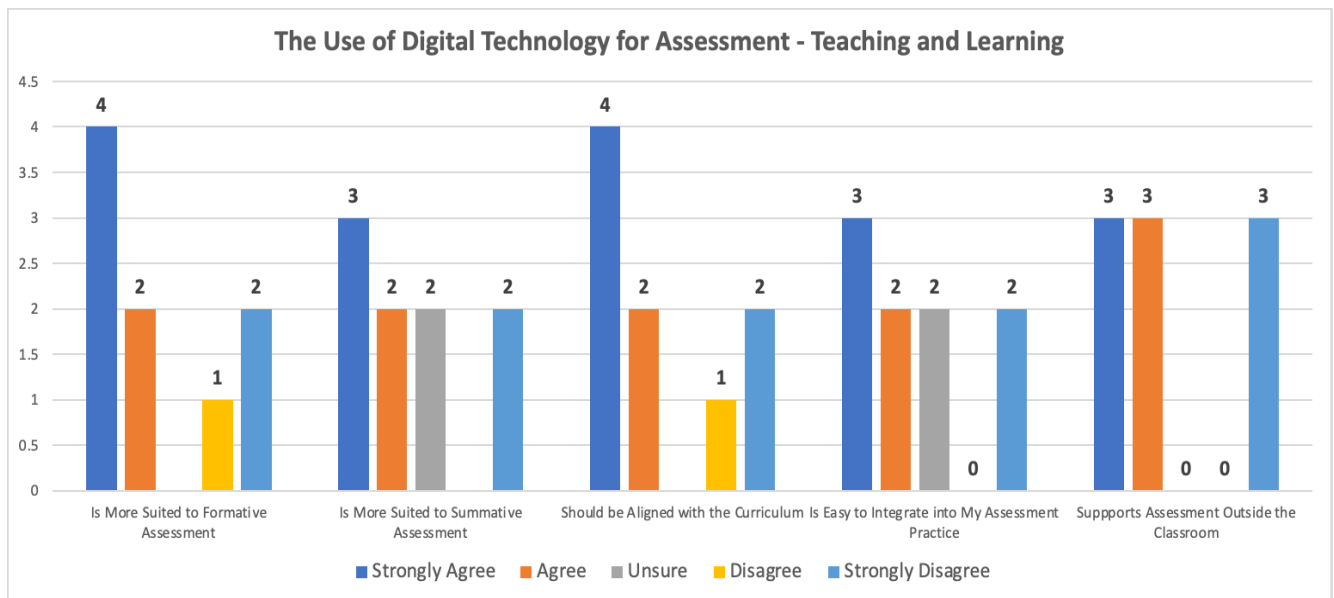


Figure 5.12 The Use of Digital Technology for Assessment – Teaching and Learning

Teacher Five who teaches in a vocational and technical High School maintained that:

“The differences in student knowledge, development and interest are the main difficulties. Children demand what they are used to. Students usually want what works best or is not challenging, or they simply do not understand the system. How open a student is to develop themselves and how far in their development they are determines the complexity of the implementation of AfL.”

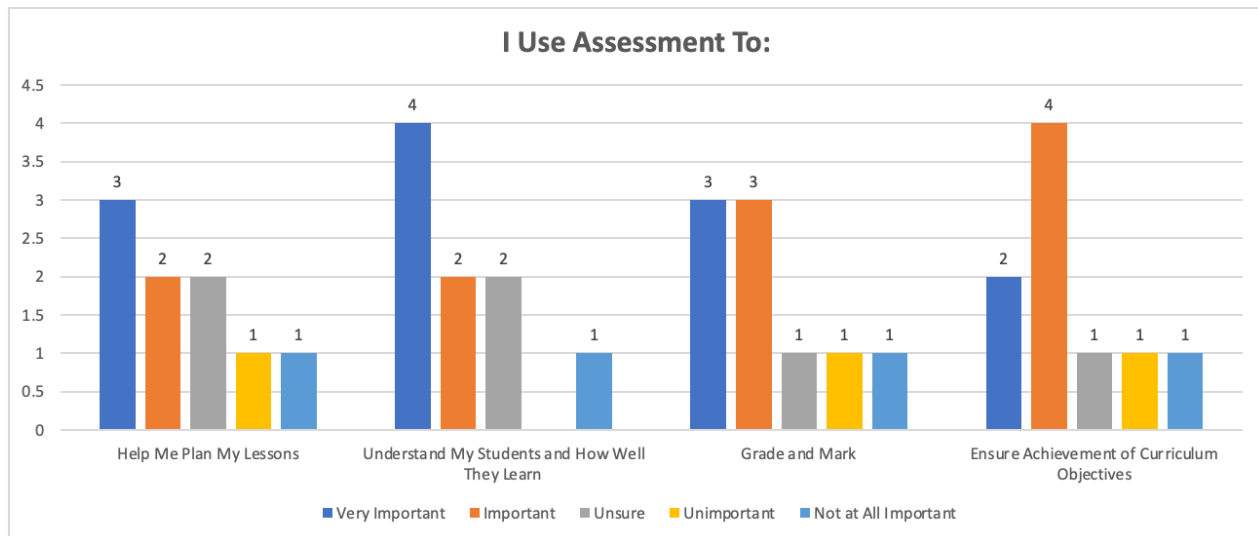


Figure 5.13. I Use Assessment to ...

Feedback The issue 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. Teacher Three observed:

“I think it is very useful for children who have not understood the lesson or who have missed it. It allows them not to hesitate to make mistakes and to go back and practice the content again.”

On the other hand, Teacher Four stated:

“I don't think the feedback is very solid. If the student gets the answer wrong and then tries to solve the same question again and again, this hinders the evaluation. The child may be self-learning, but the teacher may not understand who drew what conclusions.”

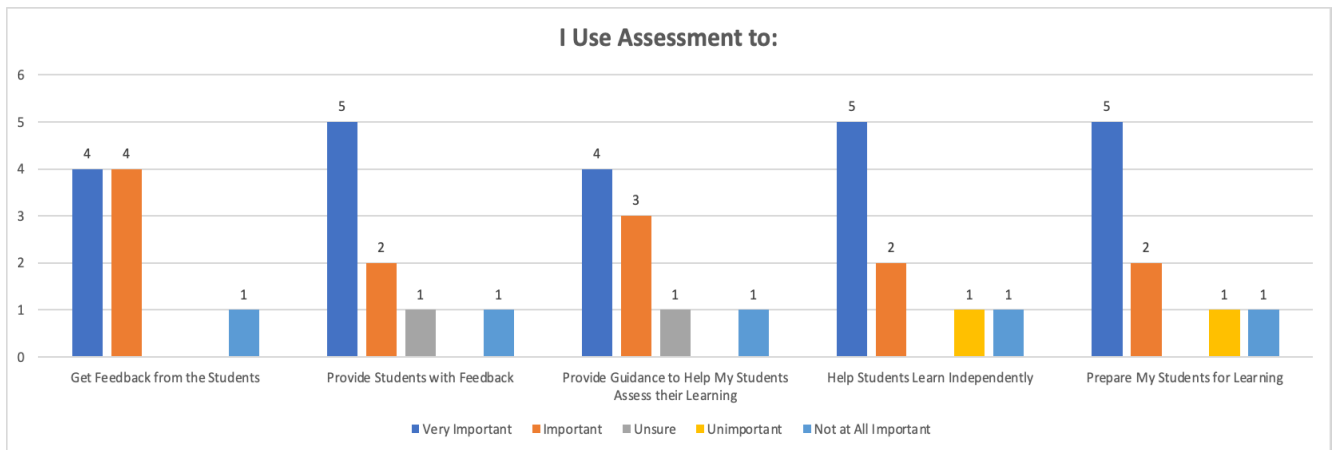


Figure 5.14 *I Use Assessment to ...I*

Significantly, and following participation in the project, several teachers noted they had become more reflective and positive about the approach and stressed the importance of developing a positive outlook for better understanding, particularly on the benefits of feedback. Teacher Three revealed:

“I thought I would like to continue using this method. I believe it is useful to use it for personal evaluations. Every student is unique. It is very useful for individual assessment and learning. It's like individual learning.”

Formative Assessment The implementation of formative assessment is a challenge throughout the education system and, as is the case here, a common barrier is time to implement the strategies in class. Lack of time to properly integrate AfL into their teaching was raised as a source of concern by several teachers. Preparing students for external examination means that some teachers focusing on this aspect of teaching, leaving little time for other forms of assessment or evaluations as they called them in the interviews. For example, Teacher Three who teaches in a private Junior High school commented:

“Our main problem is time. We teach courses with experimental content, but students have high exam and achievement anxiety. Our systemic problem is lack of time, which limits our possibilities in evaluation. The fact that it prevents one-to-one communication creates a handicap in more comprehensive evaluations.”

On the other hand, saving time was also a theme that arose with Teacher One saying:

“The platform saves time. In our age, time and speed have become very important. The platform saves time and enables faster learning. It allows students and teachers to be one step ahead.”

However, it is important to note that the majority believe that feedback helps students understand the content and correct their mistakes. However, there is a need for training and further professional development in order to help teachers use in their daily teaching and learning.

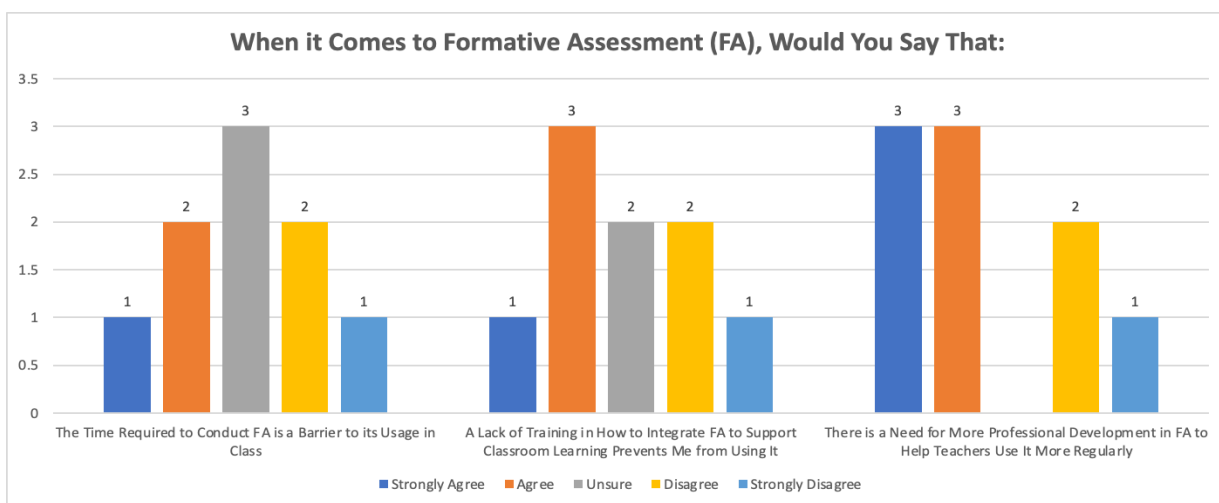


Figure 5.15 *When it Comes to Formative Assessment (FA), Would You Say that ...!*

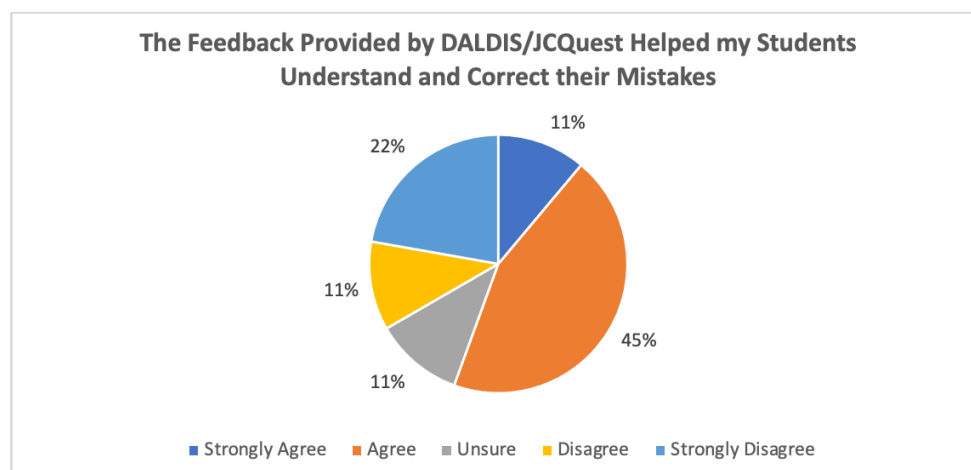


Figure 5.16 *The Feedback Provided by DALDIS/JCQuest Helped my Students Understand and Correct their Mistakes*

Independent Learners and Motivation In addition, teachers believe that DALDIS/JCQuest helped students become more independent learners and one of the successful benefits of the system for those students who were eager to learn is that improved motivation. However, they also felt that for those not interested in the lesson, the tool did not provide any change. When asked who they felt benefited most from the system, overall the teachers believed that those students already motivated to use technology and keen to self-learn were the most motivated and interested.

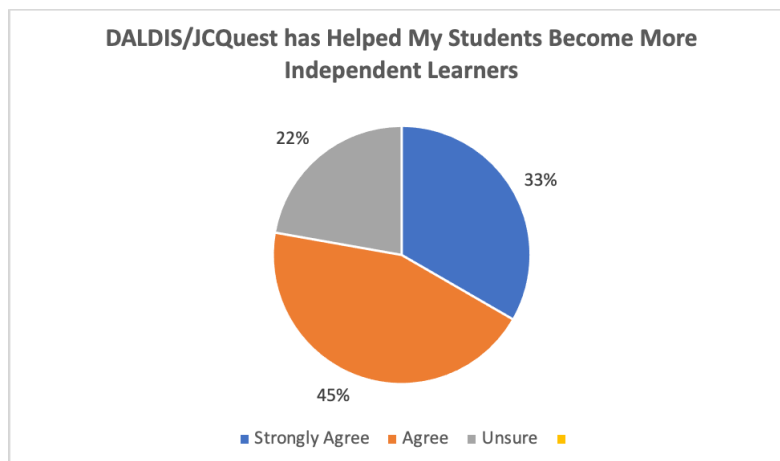


Figure 5.17 DALDIS/JCQuest had Helped My Students Become More Independent Learners

Usage DALDIS/JCQuest resources were considered by all to be useful in supporting student learning and engagement and the majority used the platform frequently (at least every two weeks).

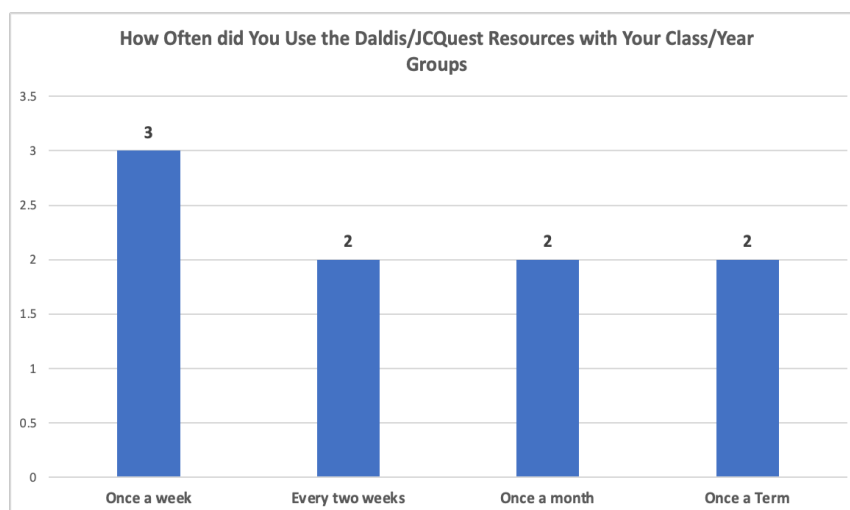


Figure 5.18 How Often Use this DALDIS/JCQuest Resources with Your Class/Year Groups

The theme of its usefulness arose many times during the interviews. For example, describing the Dashboard, Teacher Two said:

“It was good, it took a burden off the teacher. It was very useful for statistical information and evaluations. You can measure the student's level of learning and give individual feedback.”

Teacher One noted:

“I found the teacher dashboard very useful. It has been very helpful and a very necessary part of the platform to keep track of students' progress. Very helpful in understanding students' progress.”

And Teacher Three remarked:

“I think the interface of the screen is very useful and the platform is rich in content”.

Disappointingly though less than half of respondents (45%) felt that the Turkish materials were well aligned with the curriculum with a similar number expressing uncertainty about it. Just one teacher strongly disagreed.

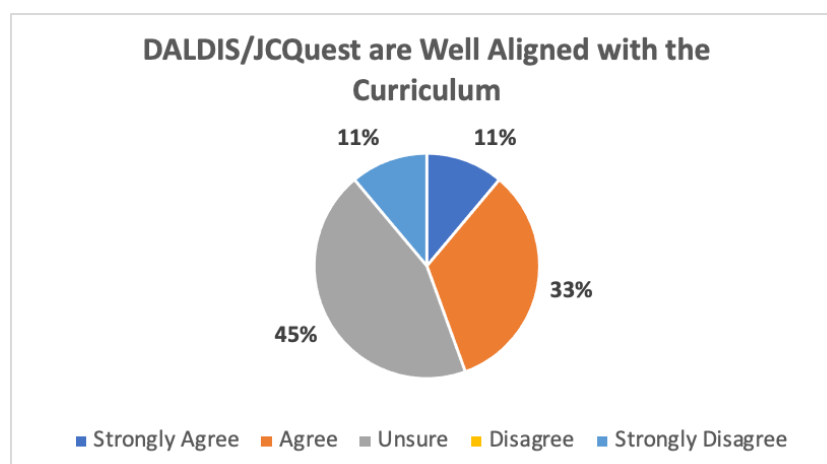


Figure 5.19 DALDIS/JCQuest are well Aligned with the Curriculum

Most of the teachers reported that students predominantly used the DALDIS/JCQuest system while at school rather than at home and the majority indicated that they made good use of the dashboard to check their students' progress.

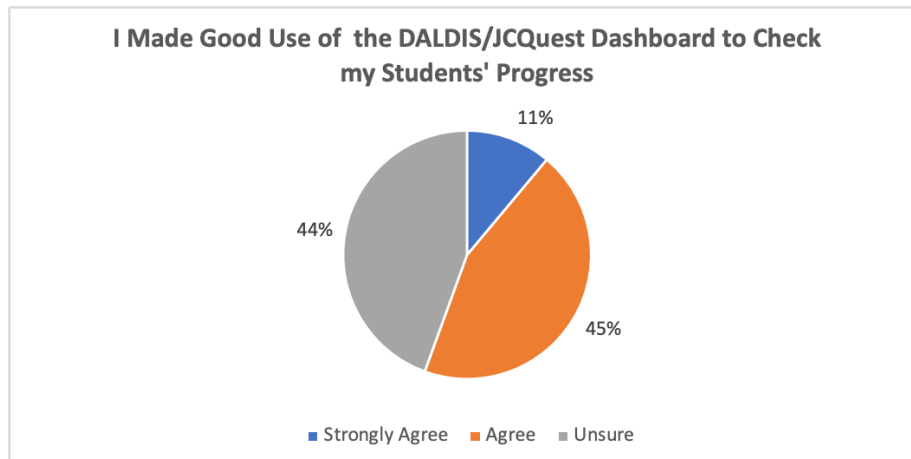


Figure 5.20 I Made Good Use of the DALDIS/JCQuest Dashboard to Check my Students' Progress

Most of the teachers believed that an automated assessment system like DALDIS/JCQuest makes regular, ongoing assessment easier as it reduces the amount of teacher time required for assessing.

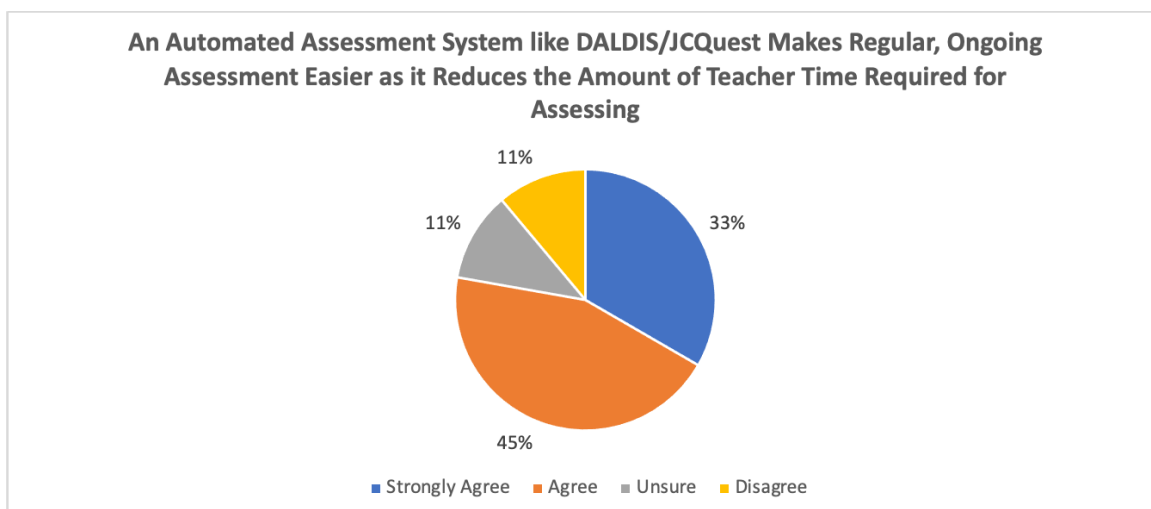


Figure 5.21 An Automated Assessment System like DALDIS/JCQuest makes Regular, Ongoing Assessment Easier as it Reduces the Amount of Teacher Time Required for Assessing

Teachers' Opinions on the Usefulness of DALDIS/JCQuest Interestingly, interviewees raised the fact that technology can place teachers in the role of learner alongside their students revealing a change from their traditional role as the individual with all the answers. For example, Teacher Five said:

“I can say that I benefited the most from preparing course contents. My students also benefited from it at a similar rate, and it was interesting for my students to include topics that were not covered much in the curriculum.”

Similarly, teacher motivation and enjoyment in the project was very evident from the interviews. As Teacher Six observed:

“It motivates us because we, teachers, need such activities during the lesson. As a teacher, we must always be on the lookout. Since my students benefit too, anything that benefits students motivates us as well.”

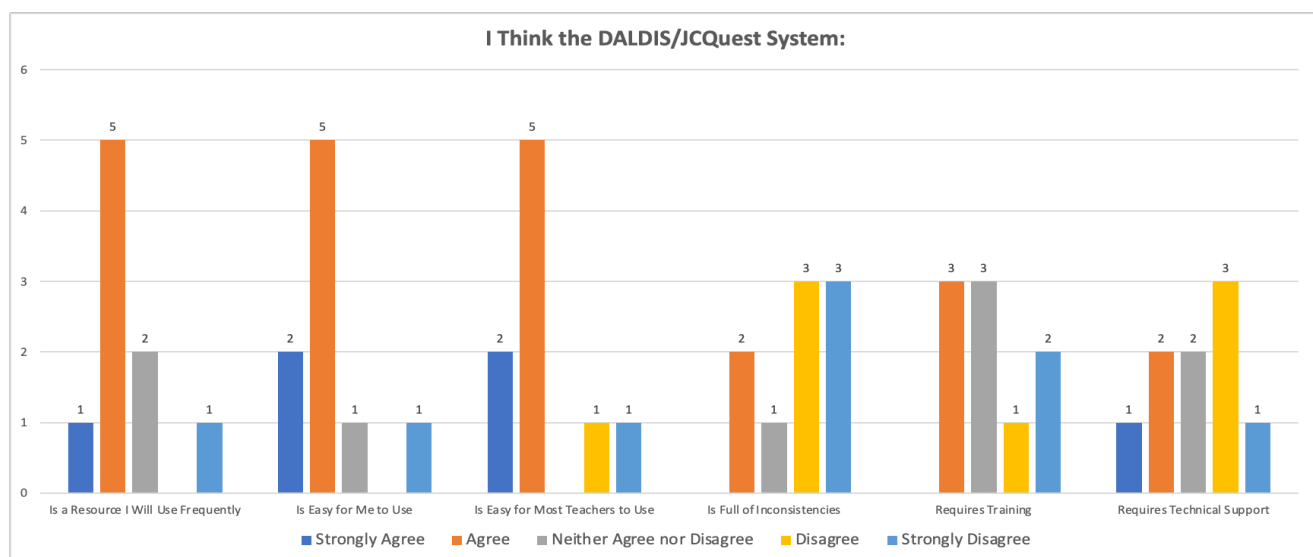


Figure 5.22 I Think DALDIS/JCQuest System ...

Suggestions for pedagogic changes for more effective teaching using technology included, add-ons such as stickers or medals where students can see their success levels and be individually motivated. This was seen as particularly important for younger students as rewards for their efforts and achievements. At the same time, while this might increase enjoyment on one hand, there is the risk that learning could become targeted at those areas where rewards are given and efforts decrease when rewards are not received.

Teacher Six also suggested that the *“... interface of the platform and its contents can be visually enriched and made more interesting.”*

When asked to compare DALDIS/JCQuest with other technology platforms all of the teachers gave a resounding approval for the system when compared to other apps. For example, Teacher 1 said “*I can say that Daldis is ahead of other tools with its question content and richness.*”

Teacher Three added:

“Kahoot is a completely different program, it's not that skill-based, it's designed to surface knowledge or have quick fun/competition. This system is a more learning based system that includes more learning processes. DALDIS is way ahead of the others regarding this aspect.”

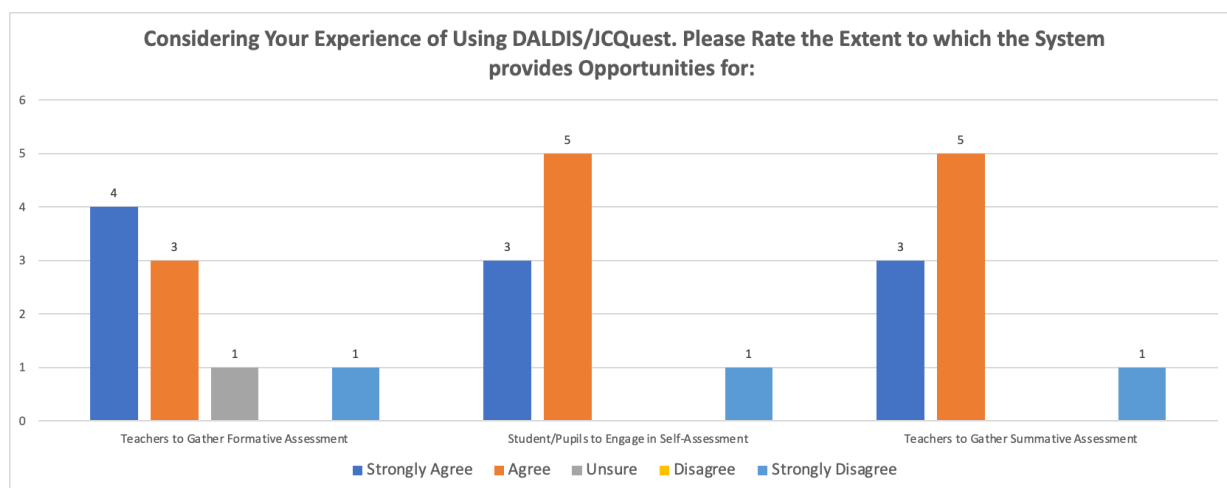


Figure 5.23 *Considering Your Experience of Using DALDIS/JCQuest, Please Rate the Extent to which the System Provides Opportunities for ...*

Since participating in the project, most teachers are more confident in using Assessment for Learning (AfL) to enhance their classroom teaching practices. They feel more confident about using technology to support student assessment and most have a greater appreciation of the potential benefits that technology can bring to the assessment process. All of the teachers agreed that technical difficulties may hinder the use of teaching with technology in schools. According to the teachers, these issues can be particularly significant in state schools where lack of technical equipment and access to the Internet may be limited. As Teacher Three remarked “*Not every student has a mobile phone or tablet, and not all schools have computer classes.*”

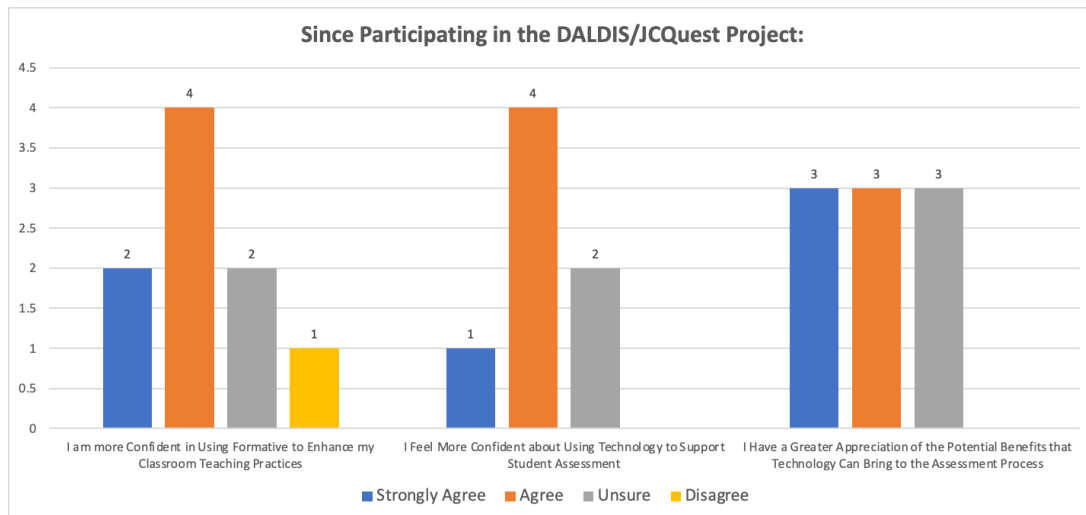


Figure 5.24 Since Participating in the DALDIS/JCQuest Project ...

Finally, almost all said they would continue to use the DALDIS/JCQuest system. Just two teachers replied when asked to list any particular advantages (if any) of using DALDIS/JCQuest over and above other approaches saying:

“It is very useful for its intended use. However, I would like to be able to see the questions that the students made mistakes and answered again while the time spent was seen.”

and

“It helped with digital communication skills.”

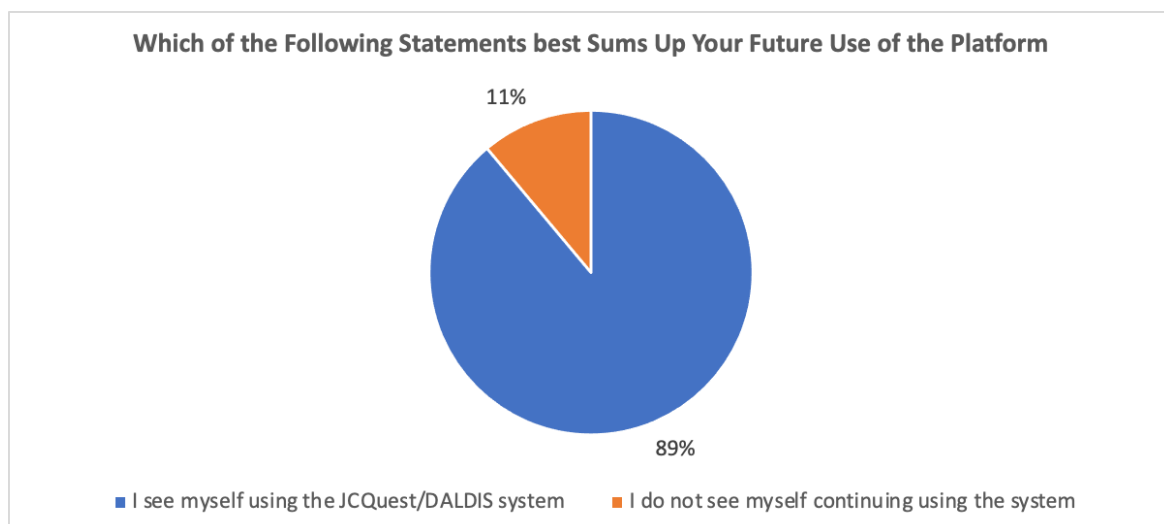


Figure 5.25 Which of the Following Statements Best Sums Up Your Future Use of the Platform

Chapter Five

Discussion

The reported perceptions of students from the quantitative data contain mainly positive views towards using the DALDIS/JCQuest system to support learning. The majority found that the system helped them learn, and they became more interested in their subject after participating in the project. However, some issues were identified. While most found the system easy to use, about 10% of students remained unsure of their opinion. At the same time, a few disagreed that it was easy, which is perhaps understandable as the platform as a learning method was introduced to the students for the first time. Therefore early identification of those students who may be experiencing difficulties is essential.

An important issue that arose related to students' perceptions about the benefits of the feedback provided, with the majority stating they did not find the questions with feedback good and that they did not learn more from questions with feedback. This result suggests that teachers must be cognisant of the importance and central role of providing the appropriate level of detailed feedback. In addition, research shows that feedback that does not provide students with specific guidance on how to improve may have a negative impact on their learning (William, 2010). While it can be observed from the teachers' quantitative survey that it is agreed that formative assessment is for improving students through feedback, it is suggested that they may need further professional development and support in this area. In addition, while there is an assumption that pictures help students learn, a surprising proportion of students (40%) questioned the efficacy of pictures in the DALDIS/JCQuest system helped them learn. It may be that the images used did not adequately illustrate the educational point or that the learning style of some students is not disposed to learning with images. Nevertheless, most students would like their school to continue to use the DALDIS/JCQuest resource materials and would like to see them created for every school subject.

Based on the feedback from interviews with the students involved in the project, all found the system very easy to use. However, there were some concerns about moving the boxes on the matching questions. In contrast to the questionnaire data regarding feedback, in the interviews, students' perception was more favourable and considered the feedback helpful, although it could be more explanatory. The students' active participation in the project was evident, with a high degree of

motivation to learn. Identifying factors that increase student motivation to learn is vital as it can influence the choice of appropriate interventions and may improve student engagement with the curriculum. Such interventions may be particularly beneficial for those students who do not engage with traditional teaching methods. At the same time, using new tools and materials might be more attractive.

Data from the teacher questionnaire provided intriguing results on their overall confidence and comfort with using technology for teaching. First, all the teachers believed that technology integration in their schools was well-resourced and supported. It should be noted that this may not be representative of all Turkish schools as one-third of the schools that participated in the study were private Junior High Schools and may be more resourced than public schools. According to Cowies and Jones (2005), teacher confidence and beliefs about technology make a difference in student learning and issues around teacher professional development, school technological infrastructure and technical support. Levels of technical support, aid, manuals and time were considered significant challenges affecting their confidence and comfort with technology. Thus, there is a critical need to respond to these factors concerning the use of technology for teaching and learning. Further, there was no significant relationship between years of teaching experience, age bracket and teacher confidence in using technology.

Results from the questionnaire on teachers' use and understanding of formative assessment revealed a wide range of similarities regarding the purpose of this approach for teaching and learning across different grade levels and subjects. Teachers recognised the value of assessment for monitoring and gaining insight into student learning. This finding is noteworthy as research has identified that factors that may influence the use of formative assessment in the classroom include teachers' knowledge and skills regarding the nature and purpose of AfL (Heitink et al., 2016). Responses indicated that information from the system about evidence of student learning could be used as feedback for the teacher that can then be used in both a formative and summative way. In addition, if the assessment can be linked to the curriculum, teachers and students can use the system to evaluate and achieve the goals set as curriculum objectives.

Finally, when teachers evaluated the effectiveness of the DALDIS/JCQuest system, they appreciated its effectiveness in improving students' understanding of the topics and stimulating their interest. We also received several positive comments regarding the benefit of the system in reducing time spent

on assessment. However, even though the teachers agreed on the benefits of technology to teaching, they stated at the same time that it presents some challenges regarding training and technical support to use the system effectively. This finding raises important questions about how schools can cope with increased demand for digital competence as a core competency in the curriculum when training and technical support is limited or inadequate.

Based on the feedback we got from interviews with teachers involved in the project described earlier, it was clear that the teachers were very interested in using technology to teach. Their interest demonstrates a positive bias towards technology use in the classroom and reveals a strong link with technology adoption for teaching and learning. Increased students' motivation and interest seem to be the main pedagogical reason why teachers are willing to adopt technology in education. Interests have been identified as playing a pivotal role in influencing students' engagement and accomplishment in learning and intention to participate in the future (Arikpo & Grace, 2015). To promote higher interest, teachers should consider teaching approaches and strategies that use new tools and materials to engage students more effectively in learning.

Technical inadequacies were among the difficulties described in terms of concerns with AfL. Accordingly, teachers need better technical support to integrate AfL fully into their classrooms. Regarding other problems, insufficient time due to a focus on high-stakes exams was considered a significant barrier for some teachers trying to integrate AfL into their practice. Adopting technology use for AfL competes with other elements that need to be considered, such as insufficient time to teach anything that is not on a test and considered peripheral to their course. It is not only teachers but also students, parents, and school administrators who respond to these high-stake exams that have come to determine what is taught, how it is taught and what is assessed in the classroom.

As teachers are responsible for reconciling the curriculum with upcoming exams, adopting the AfL approach is a challenge that needs to work within the context of the education system to respond more effectively to students' needs and improve learning outcomes. However, despite these concerns, it is noteworthy that several teachers are becoming more optimistic about the AfL approach following participation in the project.

Summary This paper presented the results of using the DALDIS/JCQuest system in twelve Turkish schools. Overall, the results suggest a positive perception by teachers and students of the



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system. The teachers involved in the study appreciated the system’s effectiveness in increasing student engagement and motivation to learn. In addition, we also got positive comments regarding the value of formative assessment and some critical observations about the need for better technical support to integrate AfL in their classrooms fully.

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JCQuest



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.

For more information

-  daldis.eu/
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