

## Portfolio Evidence: SQL Lesson Plan Extract

**Subject:** IGCSE Computer Science

**Topic:** SQL Queries: SELECT and FROM

**Class:** KS4, 12 students

**Focus:** Introducing SQL through structured modelling, guided practice, formative assessment and bilingual vocabulary support.

*This annotated lesson shows how I planned an introductory IGCSE Computer Science lesson on SQL by building from students' prior knowledge of database structure, including tables, fields, records and primary keys. The lesson focused on helping students understand the purpose of SQL and construct simple SELECT and FROM queries accurately. It used step-by-step modelling, peer discussion, a hinge question, live database practice and an exit ticket to identify misconceptions and support students in moving from syntax recognition to independent query writing.*

*This annotated lesson plan extract highlights:*

- *formative assessment through mini-whiteboards, ABCD cards, questioning and an exit ticket;*
- *structured modelling of SQL syntax using SELECT and FROM;*
- *guided practice and peer explanation before independent work;*
- *bilingual vocabulary support for EAL learners;*
- *live database practice to help students test, correct and improve their SQL queries.*

<b>Learning Context</b>	Students have completed Section 9.1 (Database Structure). They can define tables, fields, records, and primary keys. This lesson introduces the purpose of SQL as a query language and teaches the syntax for extracting data from a single table using SELECT and FROM.	
<b>Aims for learning</b>	<b>Learning Objectives:</b>	<b>Evidence of Learning:</b>
	By the end of the lesson, students will be able to: <ol style="list-style-type: none"> <li>1. Describe the function of SQL as a query language for databases.</li> <li>2. Write correct SQL statements using SELECT and FROM.</li> <li>3. Use self-questioning to monitor and evaluate their query construction.</li> </ol>	<ul style="list-style-type: none"> <li>• Students write correct SQL statements on the <i>sql-practice.com</i> interface.</li> <li>• Students explain verbally how their statement retrieves data.</li> <li>• Students identify and correct at least one syntax or logic error using peer feedback.</li> </ul>
<b>Anticipated misconceptions and planned responses</b>	<ul style="list-style-type: none"> <li>• Students may confuse table names with field names. Emphasize SQL syntax structure visually in slides and examples.</li> <li>• Students may forget commas between field names. Model correct and incorrect syntax on the board and ask students to correct it.</li> <li>• Students may believe SQL is case-sensitive. Clarify that SQL keywords are not case-sensitive, but good practice uses uppercase for clarity.</li> </ul>	
<b>Adaptive and inclusive teaching</b>	<ul style="list-style-type: none"> <li>• Support: Scaffolded examples on slides; step-by-step modelling before independent practice.</li> <li>• EAL students: Bilingual keyword table provided (English–Chinese).</li> <li>• Challenge: Extension queries on <i>sql-practice.com</i> using WHERE and ORDER BY.</li> </ul>	

- Grouping: Mixed-ability pairs for peer explanation and support.

Element	Time	What is the learning focus? What will students be learning – linked to Learning Objectives.	What will be happening in the classroom? Outline specific actions you need to take as a teacher as well as what students will be doing.	How will I check they are learning (formative assessment)? What strategies will you use?	Resources / Environment / Classroom Management
<b>Start of Lesson Routine (creating a climate for learning)</b>	0-2 min	Settle & prepare for learning	Greeting, attendance, students open laptops and sql-practice.com page.	Observation	Laptops, projector
<b>Introduction</b>	2-6 min	Activate prior knowledge (Database structure)	<b>[Formative assessment]</b> <i>Mini-whiteboards were used to check students' prior knowledge of tables, fields and primary keys before introducing SQL.</i> Project a short "Students" table (from slide). Ask questions: "What is this? (table)", "What are these? (fields)", "Which is the primary key?" → Whole-class answer using mini-whiteboards.	Check mini-whiteboards answers	Slide "What Am I?", mini-whiteboards.
<b>Main body of lesson</b>	6-9 min	Set purpose and context	Display objectives (English + Chinese keywords). Ask: "Why might we want the computer to answer questions about the data?" Lead into: "Today we'll learn to query databases using SQL."	Discussion	Slides with objectives & bilingual keywords
	9-17 min	Demonstrate SQL structure	<b>[Structured modelling]</b> <i>SQL syntax was introduced in small visible steps so students could connect SELECT to fields, FROM to the table, and the output to the query.</i> Model simple queries step-by-step: SELECT * FROM patients; → "Shows everything." SELECT first_name, last_name FROM patients; → "Shows specific fields." Point out SELECT + FROM pattern visually on slide.	Ask concept check questions ("What comes after SELECT?").	Slides "SQL: SELECT"
	17-24 min	Students practise with teacher support	<b>[Guided practice]</b> <i>Students practised in pairs before independent work, allowing misconceptions about field names, table names and</i>		Slide or whiteboard

	24-28 min	Check core understanding before moving on	<p><b>punctuation to be addressed early.</b></p> <p>Students in pairs write one or two queries from the board (“Show all patients’ cities” / “Show patient_id and allergies”). Teacher circulates, invites volunteers to share correct syntax aloud.</p> <p><b>[Hinge question]</b></p> <p><i>The ABCD question checked whether students understood the SELECT/FROM structure before moving into independent SQL practice.</i></p> <p>Display multiple-choice question: “Which SQL shows names and scores?” A–D options (correct: C). Students answer using ABCD cards.</p>	Peer discussion; verbal feedback.	prompts
	28-36 min	Apply learning individually	<p><b>[Independent application and EAL support]</b></p> <p><i>Students tested their SQL queries on a live database website, while bilingual keywords supported accurate use of technical vocabulary.</i></p> <p>Students complete Part 1 of “SQL_Practice_Hospital_Database on sql-practice.com” (queries 1–5 only). Teacher circulates, supports EAL students using bilingual keyword table.</p>	Formative check, quick count of responses.	Hinge question slide
				Observation of live output; on-the-spot feedback.	Worksheet + website
<b>Plenary</b>	36-40 min	Reflect & consolidate learning	<p><b>[Exit ticket]</b></p> <p><i>The Microsoft Form provided individual evidence of learning and helped identify which students needed more support with SQL syntax.</i></p> <p>Microsoft Form (QR on slide):</p> <ul style="list-style-type: none"> <li>• MCQ: What does FROM specify?</li> <li>• MCQ: Which shows all records?</li> <li>• Short reflection: “What helped you understand SQL today?”</li> <li>• “What do you still need help with?”</li> </ul>	Formative data; reflection insight.	Microsoft Form / QR

### Lesson evaluation

The lesson went well, and the majority of the students were engaged throughout the different phases, although a small number of students needed additional reminders to remain focused. During the “We Do” session, interaction with students was particularly productive, as I was able to address misconceptions about SQL syntax in real time. Most students

demonstrated understanding when constructing simple SELECT and FROM queries, and they applied this knowledge effectively in the practice tasks. Using a real database on sql-practice.com made the learning experience more authentic, and students were generally successful in producing correct queries. Their progress was evident both through verbal explanations and the accuracy of the outputs shown on their screens.

### What I learned and next steps

This lesson reinforced the importance of modelling new programming or query syntax in small, visible steps. Students were more successful when they could see the SELECT and FROM structure clearly and connect each part of the query to the database table, fields and output.

The guided practice was effective because it allowed misconceptions to appear while I was still able to address them directly. For example, some students confused table names with field names or forgot punctuation between selected fields. Addressing these errors during the “We Do” stage helped students move into independent practice with more confidence.

Using a real database practice website made the learning more authentic. Students were able to test their queries immediately and see whether the output matched their intention. This supported both technical accuracy and self-correction, because students could use the result of the query as feedback.

The lesson also showed that bilingual keyword support was useful for reducing language barriers, especially when students were learning both a new concept and new technical vocabulary. In future, I would make the keyword table more visible throughout the lesson and ask students to use the terms actively in verbal explanations.

For the next lesson, I would use the hinge question and exit-ticket responses to plan a differentiated starter. Some students would revisit core SELECT and FROM syntax, while more confident students would move on to extension queries using WHERE or ORDER BY. I would also include one more active response routine before independent practice, such as mini-whiteboards or a short “spot the error” task, to check understanding across the whole class before students work independently.