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Teaching Tip
Bridging SQL Mastery and Career Confidence for Undergraduate Students Through Simulated Job Interviews

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ABSTRACT

Employers increasingly prioritize candidates who can solve real-world Structured Query Language (SQL) problems, particularly during technical interviews. However, many undergraduate students feel underprepared for these interviews because they have not engaged in the deep learning needed to apply SQL concepts confidently. Additionally, students often fail to recognize the career relevance of SQL skills. This Teaching Tip introduces an immersive SQL lesson designed to bridge the gap between conceptual learning and practical application. The lesson includes a mock SQL technical interview, where students apply their knowledge to solve real-world business problems, class discussions on SQL-related careers, and a post-interview debrief to foster reflection and feedback. Results from pre- and post-lesson surveys indicate significant benefits, including enhanced student confidence in their SQL knowledge, student intention to continue learning and using SQL in the future, and student confidence in their ability to perform well in real SQL interviews. Open-ended survey responses support these findings and further reveal that the SQL lesson positively impacts students by clarifying concepts, reinforcing learned skills, and demonstrating the applicability of SQL in real-world scenarios. This approach demonstrates a practical and scalable framework for integrating immersive professional experiences into technical coursework that may be adapted to different class types (e.g., adopting an abridged version) and different courses (e.g., data analysis).

Keywords: Experiential learning & education, Student learning success, Structured query language (SQL), Student preparedness, Scenario-based design

1. INTRODUCTION

Organizations increasingly rely on data-driven decision making, marketing, and customer relationship management to remain competitive (Bullock, 2024), creating a growing need for employees with the skills to build, store, and analyze data in relational databases. This need is one reason why Structured Query Language (SQL) is currently ranked as one of the most in-demand programming languages (Cass, 2024; Joubert, 2024; Ngo-Ye & Choi, 2021; Vailshery, 2024) and why providing Information Systems (IS) students a solid foundation in SQL can help improve their competitiveness in today's challenging job market (Coursera Editorial Team, 2025).

However, simply understanding practical skills in an academic setting may not be sufficient to prepare IS students for a successful transition to the workforce, especially in today's data-rich business world. For example, many employers are now requiring job candidates to demonstrate their applicable skills and their ability to solve real-world problems during their interviews (Gray, 2024; Indeed Editorial Team, 2025a). Thus, interviewing for positions that need SQL may require students not only to understand SQL, but also to confidently apply it to novel situations. Additionally, it can be challenging for IS students to see the career relevance of their coursework. Providing them with a near-world experience could increase students' desire to strengthen their SQL knowledge by demonstrating how it could benefit them in their job searches. Many IS students also need help refining their interview skills. While career centers provide mock interviews to help students strengthen their skills, these interviews are very general and do not query students regarding their technical knowledge or skills. When preparing for real-world technical interviews, especially for skills like Python and SQL, practicing actual interview questions is a common and effective approach to interview preparation (Daniel et al., 2023; Machhale et al., 2024). The benefit of providing IS students with deeper SQL knowledge, career-relevant learning, and interview preparation prompted us to explore whether integrating near-world SQL interview practice into a database management class could offer them a meaningful introduction to practical SQL situations early in their learning journey.

In this Teaching Tip, we propose an SQL lesson that bridges conceptual learning and practical application through an immersive interview experience in which students must

demonstrate their ability to use SQL knowledge to address real-world problems. The lesson also includes an instructor-provided discussion on SQL-related careers and a post-interview class debrief. Results of our pre- and post-surveys suggest that the lesson may boost student confidence and ability to demonstrate SQL knowledge during technical job interviews. Our findings also suggest that the lesson improved student intention to continue learning and using SQL in the future. This Teaching Tip contributes to the field of IS education by offering an innovative approach to bridging academic learning with career preparation. It also highlights how emphasizing career relevance may boost IS students' confidence and motivation in learning technical skills. We hope these insights are valuable to instructors of a wide range of technical courses within IS.

2. RELATED WORK

2.1 Confidence and Motivation in SQL Learning

SQL is one of the most sought-after languages due to its role in many in-demand IS careers, including web developer, data analyst, business analyst, SQL developer, data warehouse architect, and database administrator/developer (Indeed Editorial Team, 2025b). However, knowing SQL concepts is not enough. Successful IS professionals use their technical know-how to solve business problems, thus it is important to train students on how they may leverage their technical knowledge to create value in real-world situations (Topi, 2019). Research suggests that preparing students for their careers is best accomplished through experiential learning in which students apply their skills rather than simply memorizing concepts (Errington, 2011; Siggard et al., 2022; Taipalus, 2019). Experiential learning engages students in meaningful learning activities, like problem-solving, and encourages them to reflect on their process and choices (Prince, 2004; Sclarow et al., 2024). Research also suggests that when students apply what they have learned to novel, "near-world scenarios" with authentic contexts, they are better prepared for the uncertainty and ill-defined problems they will encounter in their professional careers and gain enhanced learning, learning confidence, and motivation to learn (Ampountolas et al., 2019; Andres, 2019; Chen & Zhao, 2022; Cicuto & Torres, 2016; Cummings & Connelly, 2016; Errington, 2011).

While many experiential SQL learning activities have been designed and implemented (e.g., Domingues, 2024; McKinney et al., 2023), our mock SQL interview lesson requires students to apply their SQL knowledge to solve real-world problems, such as those used in technical job interviews, and to provide written explanations of their solutions. The practical experience gained from this lesson enhances student intention to learn and use SQL and boosts their confidence in solving problems during both SQL-specific and more general technical interviews.

2.2 Job Interview Skills and Confidence

In a recent survey of Gen Z (individuals born between 1997 and 2012), 29% of respondents selected "participating in job interviews" as the most challenging aspect of job searches for young people (BestColleges, 2022). Similarly, a survey by Symplicity (2023) suggests that more than half of all students are not confident in their interview skills, regardless of their education level. Students' interview-related concerns are not unwarranted. Ngo-Ye et al. (2022) invited two IT professionals from a Fortune 500 company to present at a student club event on campus. During their presentation, the speakers discussed how they were asked to solve a problem during their second-round interviews and stressed that the interviewer's goal was to learn about how the candidates thought about and worked through the problem, not to see if they knew the correct answer. Therefore, effective interview preparation should focus on demonstrating problem-solving processes and strategies rather than simply memorizing answers.

In our mock SQL interview lesson, students viewed a video-recorded mock interview featuring SQL questions and then developed their own solutions to each one, explicitly articulating their problem-solving processes and strategies as if they were the interviewee. This lesson not only provides students with experiential learning opportunities to apply their SQL knowledge to real-world, industry-relevant challenges, but also offers authentic exposure to the expectations and dynamics of technical job interviews.

3. COURSE LEARNING MODULE DESIGN

3.1 Course Introduction

We designed and implemented the SQL mock interview learning modules in an undergraduate IS database management systems course. The 16-week course covers topics such as relational data models, data normalization, and SQL statements. Upon successful completion of the database course, students will be able to:

- Prepare data models for designing relational databases using entity-relationship diagrams.
- Apply the concepts of the relational data model and data normalization.
- Write introductory to intermediate-level SQL queries.
- Understand the characteristics of non-relational (NoSQL) data.

Table 1 shows the course week-based plan while Table 2 illustrates the mock interview activity schedule.

3.1.1 Part 1: Introducing SQL-Related Careers. In Part 1 of the lesson, the instructor introduces current jobs that require SQL skills, emphasizing their high demand and marketability as well as the career relevance of course topics. For example, data analysts usually need high proficiency in Data Manipulation Language (DML) commands and SQL functions to analyze existing data, while data administrators need proficiency in Data Definition Language (DDL) commands to create and manage databases. At the end of the career introduction in Part 1, the instructor briefly describes the procedure and content of a common SQL-focused technical interview and guides students to prepare for the mock interview in Part 2.

3.1.2 Part 2: Preparing for Mock SQL Interview. After the SQL-related career introduction, the instructor announces that in 15 minutes students will participate in a mock SQL interview that requires them to use their SQL skills to solve complicated real-world business problems. Students may use this time to calm down and psychologically prepare themselves for the interview, to review the key SQL concepts and applications they have learned, or to immerse themselves in the mock interview scenario. Students are also reminded that interview questions may have more than one correct answer and are

encouraged to think creatively when applying their knowledge and skills to solve the problems.

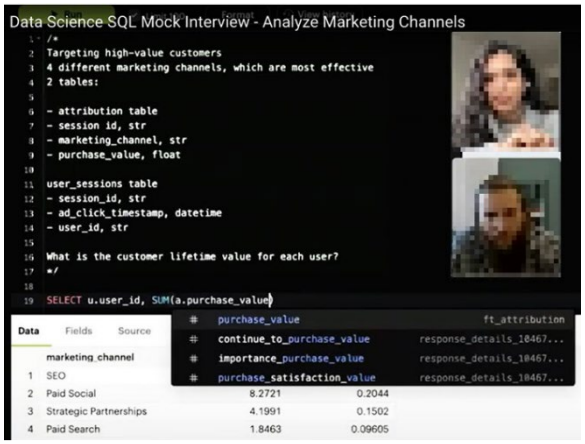
Module#	Topic	Content
1-4	Database management systems overview	Relational database basics, integrity rules, entity relationship (ER) diagram, data normalization
5-12	Structured query language (SQL)	SQL introduction, data manipulation language (DML) overview
13	Business intelligence introduction and data warehouses	Business intelligence architecture; extraction, transformation, and loading (ETL) process
14	Mock SQL interview lesson implementation	SQL-related career introduction, student preparation for and completion of a mock SQL interview
15	Introduction to NoSQL and big data processing	Big data introduction, Hadoop framework overview

Table 1. Weekly Class Topics of the Database Management Systems Course

Activity	Description
Part 1 (10 minutes)	The instructor gives a brief introduction to the SQL-related job market. • Highlighting that employers are looking for candidates with SQL skills • Connecting classroom content to real-world job requirements through sample job descriptions
Part 2 (15 minutes)	Fifteen minutes prior to the mock interview, students are encouraged to: • Refresh knowledge with past SQL class resources • Mentally prepare for the mock interview simulation
Part 3 (50 minutes)	The mock interview: • Students view a YouTube video of a full Data Science SQL Mock interview collectively as a class • The instructor pauses the video after each interview question • Students individually write answers to each question as if they were the interviewee

Table 2. The Mock SQL Interview In-Class Activity Schedule

3.1.3 Part 3: Mock SQL Interview Including Video Instruction. The mock SQL interview leverages a video recording of a one-on-one online mock Data Science SQL interview. Figure 1 depicts what students see during the mock interview. Both the interviewer and the job candidate have their audio and cameras on, enabling the interviewer to assess the candidate's verbal and non-verbal cues. The interviewer also observes the candidate's coding in real time through screen sharing.



*The faces of the interviewer and interviewee have been blurred to protect privacy

Figure 1. Screenshot of the Mock SQL Interview Activity Interface

The video recording was selected based on the following considerations:

- *Appropriate video length:* The mock SQL interview video is approximately 24 minutes long, which allows for a 50-minute in-class activity that includes the video, time for students to solve the interview questions on their own, and time for a brief instructor wrap-up.
- *Real job interview setting:* This recorded interview adopts a real-world professional setting, which requires students, as job candidates, to share their coding process and explanations in real-time, allowing them to experience interview-related performance anxiety.
- *Level of difficulty:* The interview questions require only a basic business background and terms are explained when needed. Most of the needed SQL concepts were taught in class prior to the mock interview. One question requires an SQL function that was not taught, challenging students to think creatively when exploring solutions.
- *Real-world questions:* The interview questions allow students to integrate their SQL and business knowledge to solve questions with multiple potential solutions, motivating them to engage in creative problem-solving.

The video can be found at https://www.youtube.com/watch?v=lnhuCj0EfPI (Exponent, 2023). However, the pedagogy described here is widely applicable and instructors are encouraged to select videos that support their own course learning objectives.

4. IMPLEMENTATION

The mock SQL interview was recently implemented as a lesson in an in-person database management course for 94 IS undergraduates. This section explains the activity in detail.

4.1 Beginning the Mock Interview

After the 15-minute student preparation, the instructor again reminds them to adopt the identity of an interview candidate before presenting the video.

SQL business problem: The video begins with the interviewer introducing the business problem (video segment 0:00-1:20). The hiring company's client, an e-commerce company, wants to improve the efficacy of its ad spend by identifying which of its four marketing channels best targets those who are most likely to become high-value, long-term customers. The candidate is asked to use the Attribution and User_Sessions tables to complete six problem-related tasks. The schema for the two data tables is listed in Table 3.

Attribution Table		User_Sessions Table	
Column label	Data type	Column label	Data type
Session_ID	Text string	Session_ID	Text string
Marketing_channel	Text string	Ad_click_timestamp	Datetime
Purchase_value	Float	User_ID	Text string

Table 3. Schema for the Attribution and User_Sessions Tables

4.2 Students' Hands-on Work Completing Tasks

During our implementation, students completed only Tasks 1-5 presented in the mock interview video in class. The most challenging interview task, Task 6, was not assigned due to meeting time constraints and to the class's level of SQL mastery. However, if using this video, other instructors may find it appropriate to include Task 6. Table 4 details Tasks 1-5 and their completion procedures.

Task (Video segment in mm:ss-mm:ss)	Video Procedure	Instructor	Students (Approximate time spent in mm: ss)
Task 1: What is the average purchase value by marketing channel? (1:20-4:35)	Present task (video segment: 1:20-1:30)	Plays video	Watch video (01:00)
	Solve task	Pauses the video at 1:30	Students work individually to solve Task 1 on their laptops (07:00)
	Review solution (video segment: 1:30-4:35)	Resumes the video	Review the solution presented in the video (03:00)
Task 2: What percentage of link clicks convert to a purchase for each marketing channel? (4:35-6:10)	Present task (video segment: 4:35-4:50)	Plays video	Watch video (01:00)
	Solve task	Pauses the video at 4:50	Students work individually to solve Task 2 on their laptops (05:00)
	Review solution (video segment: 4:50-6:10)	Resumes the video	Review the solution presented in the video (01:20)
Task 3: What is the customer lifetime value for each user? (6:10-9:06)	Present task (video segment: 6:10-6:21)	Plays video	Watch video (01:10)
	Solve task	Pauses the video at 6:21	Students work individually to solve Task 3 on their laptops (06:00)
	Review solution (video segment: 6:21-9:06)	Resumes the video	Review the solution presented in the video (02:45)
Task 4: Please identify our highest-value customers. * High-value users are users with a customer life value greater than 100. (9:06-10:05)	Present task (video segment: 9:06-9:25)	Plays video	Watch video (00:20)
	Solve task	Pauses the video at 9:25	Students work individually to solve Task 4 on their laptops (05:00)
	Review solution (video segment: 9:25-10:05)	Resumes the video	Review the solution presented in the video (00:40)
Task 5: Can you do first-touch attribution for all of our only high-value customers? *First touch attribution is an analysis in which we determine the marketing channel through which a user first encounters our product. (10:05-16:41)	Present task (video segment: 10:05-10:40)	Plays video	Watch video (00:35)
	Solve task	Pauses the video at 10:40	Students work individually to solve Task 5 on their laptops (09:10)
	Review solution (times: 10:40-16:41)	Resumes the video	Review the solution presented in the video (06:00)
Total (appx.): 50:00			

Table 4. Overview of the Tasks and Their Completion Procedures

After students watch the first task from the video, the instructor pauses the video and instructs students to complete Task 1 on their own laptops, simulating the role of the job candidate. In the recorded interview, the job candidate provides an oral explanation of their problem-solving logic while coding, narrating their thought process as they tackled the task. However, in the classroom, students work individually on their own solutions and thus cannot provide real-time oral explanations. Instead, the instructor asks students to explain their thought process by adding detailed comments to their written script solutions. After five to ten minutes, or once the majority of the class has completed Task 1, the instructor resumes the video for the students to observe how the video job candidate articulated their SQL statements and problem-solving approach. This same process is systematically repeated for Tasks 2 through 5.

The additional business background students need to understand the tasks includes definitions of high-value users and first-touch attribution, which are explained by the interviewer during relevant tasks. The needed SQL knowledge includes SQL clauses (WHERE, ORDER BY, GROUP BY, HAVING), aggregate functions (AVG, SUM), and multi-table querying techniques (INNER JOINs) previously taught in class. The RANK function is also helpful in solving the mock interview task but was not covered in the class prior to the activity. As such, students are encouraged to use their existing SQL knowledge to write alternative solutions for ranking data without relying on the RANK function. Please refer to the Appendix for an example of student work.

4.3 Concluding the Mock SQL Interview

After the interview, the instructor highlights the importance of understanding SQL concepts and applications (e.g., proper SQL statements) to solve complicated real-world business problems as well as the expectations of SQL technical job interviews. The instructor emphasizes that additional valid solutions may exist by briefly presenting creative solutions that differed from those provided in the video but were still correct. At the end of class, students submit their solutions, which are graded for participation rather than accuracy.

5. MOCK SQL INTERVIEW LESSON EFFECTIVENESS EVALUATION

5.1 Measurement

We used pre-test and post-test online surveys, approved by the university Institutional Review Board (IRB), to evaluate the lesson's impact on: student confidence in their SQL knowledge, student intention to continue learning and using SQL in the future, and student confidence in their ability to perform well in real SQL interviews.

To evaluate student confidence in their ability to apply SQL and to perform well in real SQL interviews, we developed two items and adapted eight additional items from Lin and Tsai (2013) based on the five dimensions below:

- *Conceptual Understanding:* measuring student confidence in their understanding of definitions for science concepts, laws, and theories.
- *Higher-Order Cognitive Skills:* assessing student confidence in their ability to employ scientific inquiry, problem-solving, critical thinking, and other higher-order cognitive skills.
- *Practical Work:* evaluating student confidence in their ability to accomplish laboratory activities included in both the cognitive and psychomotor domains.
- *Everyday Application:* addressing student confidence in their ability to apply science concepts and skills to everyday events.
- *Science Communication:* evaluating student confidence in their ability to communicate or discuss with others.

We developed three additional items to evaluate student intention to continue learning and using SQL in the future. All measurement items were rated on a 5-point Likert scale to assess student confidence in higher-order cognitive skills, practical work, everyday application, and science communication. Please see Table 5 for survey item details.

The survey also included five open-ended questions to gather feedback on the lesson:

- How do you see this Mock SQL Interview project benefiting students like yourself?
- What do you feel went well with this Mock SQL Interview project?
- How could this Mock SQL Interview project be improved? What specific suggestions do you have?
- Is there anything else you would like to share regarding your learning experience in this Mock SQL Interview project?
- Please share how you feel about learning SQL in the space provided below. All your feedback would be much appreciated.

5.2 Data Collection

A total of 94 IS undergraduate students, enrolled in two database management systems classes, completed the mock SQL interview lesson. Students were allowed to complete the pre-survey up to five days before the lesson and the post-survey within six days after the lesson. Each completed response received extra credit worth 3% of the final course grade. Participation in the survey was fully voluntary and respondents were assured of anonymity. We provided an alternative extra credit academic article summary assignment for students who did not wish to complete the surveys. To ensure confidentiality, a non-instructor co-author collected the data and provided the instructor only with a list of students eligible for extra credit based on completion of either the survey or alternative assignment. The instructor did not have access to 1) the survey data, 2) alternative assignment submissions, or 3) information about whether a student earned extra credit by taking the survey or completing the alternative assignment until after final semester grades were posted.

Out of the 94 students, 68 completed both the pre-survey and the post-survey. We removed responses from three students who self-reported that they did not attend the mock SQL interview lesson in the post-survey. No responses contained missing data because the response to each question was mandatory. After data cleansing, the final sample contained 65 responses. The participant pool included 41 males (63%), 23 females (35%), and one student who preferred not to report their gender. The average age of participants was 22.43 years.

	Label	Item	Mean Diff (SD)	Mean Pre (SD)	Mean Post (SD)
Knowledge confidence (higher-order thinking)	Q1.	I am experienced with SQL. (Self-developed)	0.15 (0.09)	3.52 (0.09)	3.68 (0.09)
	Q2.	I am able to critically evaluate the solutions of SQL problems.	0.26** (0.12)	3.6 (0.11)	3.86 (0.1)
	Q3.	When I come across a SQL problem, I will actively think over it first and devise a strategy to solve it.	0.2** (0.11)	3.92 (0.1)	4.12 (0.08)
	Q4.	I know how to write SQL statements.	-0.02 (0.11)	4.06 (0.1)	4.05 (0.07)
Knowledge confidence (lower-order thinking)	Q5.	I am knowledgeable of SQL. (Self-developed)	0.06 (0.07)	3.75 (0.07)	3.82 (0.07)
	Q6.	I can explain SQL concepts to others.	0.14 (0.1)	3.82 (0.1)	3.95 (0.09)
	Q7.	I can link the contents among different SQL concepts and establish the relationships between them.	0.17 (0.11)	3.82 (0.09)	3.98 (0.07)
Intention	Q8.	I intend to continue learning SQL in the future. (Self-developed)	0.09 (0.09)	4.34 (0.1)	4.43 (0.08)
	Q9.	I will try to use SQL to solve real-life problems. (Self-developed)	0.2** (0.11)	3.97 (0.12)	4.17 (0.1)
	Q10.	I plan to work in a career related to SQL. (Self-developed)	0.08 (0.09)	3.89 (0.11)	3.97 (0.1)
Interview confidence	Q11.	I am able to apply what I have learned in SQL to real life.	0.22** (0.13)	3.6 (0.13)	3.82 (0.1)
	Q12.	I am able to use what I have learned in SQL to discuss with others.	0.15 (0.11)	3.8 (0.09)	3.95 (0.08)
	Q13.	I can clearly express my own opinions to SQL professionals.	0.26** (0.15)	3.38 (0.12)	3.65 (0.11)
Note: **p<0.05					

Table 5. Survey Items and Results

5.3 Data Analysis

We conducted a within-subject analysis using a paired-sample t-test and bootstrapping resampling algorithm with 1,000 resamples to examine the effectiveness of the mock SQL interview lesson. Findings suggest the lesson increased student confidence in SQL and their motivation to work in SQL-related fields. After the t-test, we analyzed the open-ended responses to identify key themes that align with the statistical findings.

6. FINDINGS

The lesson was well received by students who appreciated how it bridged the gap between theoretical course content and real-world/professional applications. Table 5 shows the results of the analysis. Student self-reported scores increased (a positive difference in mean values) after the lesson on 12 of 13 items, five of which were significant, and seven were insignificant. Only one item, Q4, decreased, but the change was not significant.

6.1 Confidence in SQL Learning and Intention to Learn and Use SQL in the Future

Overall, students showed an increase in confidence in their SQL learning as it relates to higher-order thinking. In particular, there was a significant increase ($p<0.05$) in students' perceived confidence in critically evaluating solutions to SQL problems (Q2: M_before=3.6, SD=0.11, M_after=3.86, SD=0.1) and in their ability to actively think over an SQL problem and devise a strategy to solve it (Q3: M_before=3.92, SD=0.1; M_after=4.12, SD=0.08). However, no significant differences ($p>.05$) were found regarding experiences with SQL (Q1: M_before=3.52, SD=0.09; M_after=3.68, SD=0.09) or ability to write SQL statements decreased slightly (M_before=4.06, SD=0.1; M_after=4.05, SD=0.07). Changes to student confidence in lower-order thinking skills, including their ability to explain SQL concepts to others (Q6: M_before=3.82, SD=0.1; M_after=3.95, SD=0.09), to connect different SQL

concepts (Q7: M_before=3.82, SD=0.1; M_after=3.95, SD=0.09), and SQL knowledge were not significant.

Additionally, we found a significant increase ($p<0.05$) in students' intention to apply SQL to solve real-life problems (Q9: M_before=3.97, SD=0.12; M_after=4.17, SD=0.12). However, the increases in student intention to continue learning SQL in the future (Q8: M_before=4.34, SD=0.1; M_after=4.43, SD=0.08) and to work in a career related to SQL (Q9: M_before=3.89, SD=0.11; M_after=3.97, SD=0.1) post lesson were not significant.

Student responses to the open-ended questions echoed the quantitative findings. Students appreciated the lesson because it boosted their confidence in SQL learning and sparked their interest and motivation in further learning. For example, P14 stated, "... a lot of the SQL struggle for me was confidence. I spent an entire semester learning SQL and have no idea if I [can] use it. The mock interview sort of gave me some more confidence in this area." P4 shared, "I felt what went well was that I could answer a majority of the questions if not all." Other students felt the mock interview questions were challenging. For example, P20 responded, "I think the Mock SQL was quite beneficial. I performed HORRIBLY trying to answer the questions from the interview. Though we had the necessary skills to understand what the interviewee was writing, it was hard for me to actually replicate it myself. I think this was quite eye opening to me and showed me what to expect in the real world."

Students' open-ended question responses also revealed their heightened interest and intention in continued SQL learning, because "the more I learn about the more I find it fascinating" (P15) and "this class gave me the foundation and I will continue learning outside of this class" (P19). P39 shared that they will use this mock interview to keep learning in the future. Some participants felt the lesson revealed the importance of SQL, as P24 commented, "[I] feel like it's a technical skill that's essential to learn … I hope I can later reach a point where I can use what I've learned to solve any task given, especially in the work field."

Students' responses to the open-ended questions also revealed how the exercise helped students enhance their intention and confidence in learning by reinforcing their SQL skills and providing them with the opportunity to apply SQL to real-world problems.

6.1.1 Reinforcing Skills. Students reported that the mock interview format reinforced the SQL skills they learned in class and highlighted areas they needed to improve. As P8 reported, "I think familiarizing myself with the [interview] questions was initially hard, however, I realized that I have learned many of the necessary tools needed to solve these business questions in class." In this case, reinforcing skills was not always a smooth and straightforward process, but instead required students to experience some struggles for their growth. Participants, such as P17, found that the exercise "helped me better understand the idea of SQL knowledge and how to use it. Also, it explained tactics we should use when answering SQL questions in the mock interview by going step by step." In this case, the explanation of the problem-solving steps further reinforced SQL learning.

6.1.2 The Experiences of Applying SQL to Real-world problems. Students appreciated how the mock interview gave them the opportunity to apply their SQL knowledge to a near-world scenario, bridging the gap between theory and practice. As P28 shared, "I gained an understanding of how to apply my SQL knowledge to addressing real-world problems." P28 also wrote, "The Mock SQL Interview gave me a better idea of how to communicate the SQL problem-solving process and make connections between concepts. This undoubtedly helps students solve real-world problems and navigate the interview process." Similarly, P69 commented, "I have liked getting practice in SQL and getting to use it to solve some business questions/problems. I would like to see some more real-world applications or problems that we can do in class." Some participants, such as P66, also felt that the mock interview helped them "visualize how I would explain SQL to somebody asking about it."

6.2 Job Interview Skills and Confidence

The mock interview not only inspired student interest and intention to apply SQL to solve real-life problems but also enhanced their confidence in their ability to achieve success in such endeavors. The mock interview significantly boosted ($p<0.05$) student confidence in their interview skills, including their perceived capability to "clearly express their own opinions to SQL professionals" (Q13: M_before=3.38, SD=0.12; M_after=3.65, SD=0.11) and to "apply what I have learned in SQL to real life" (Q11: M_before=3.6, SD=0.13; M_after=3.82, SD=0.1). The mean of ratings for the question "I am able to use what I have learned in SQL to discuss with others" (Q12: M_before=3.8, SD=0.09; M_after=3.95, SD=0.08) also increased but was not significant ($p>0.05$). We next examined students' responses to the open-ended questions to find themes on how the mock interview increased their interview confidence.

Most students reported that the mock interview gave them needed insights into the technical interview process. As P1 wrote, "I think it helped students utilize what they've learned in class, see things from a real-world perspective and give them an idea of what's to come in an interview where SQL is a topic." Similarly, P9 mentioned, "The mock interview was helpful for students like myself because most of us are inexperienced with professional interviews. It gave us insight as to what an interview may look like and helps us prepare and understand what we should know when applying to positions that use SQL."

The few students who had participated in an actual SQL interview prior to the lesson also found it beneficial. One student noted, "It was very relevant and helpful, especially since I have done SQL interviews before" (P70). Some students found the lesson particularly helpful because they were actively preparing for job interviews. The mock interview questions, process, and solution approaches seemed very informative and inspirational for them. P3 wrote, "I think this is the perfect activity to add to the coursework. I happened to have [an] SQL interview set up for just a few days after we did this in-class activity and it helped me prepare greatly. I wasn't sure what to expect from the interview or what to review because we learned so much this semester. This mock interview gave me confidence that I could complete a coding question during the interview time and also provided me some guidance on what to brush up on based on the parts of the questions I didn't know how to answer."

Some students were inspired by the different career paths discussed in the lesson to consider SQL-related careers and start preparing for interviews. As P8 commented, "I think SQL is an amazing tool that I definitely plan to use in my future career … The SQL class has taught me a lot on how to use the program and it has been fun." P13 shared, "The video we watched was a unique experience and now I know where to begin my research/interview prep." Watching the simulated scenario also exposed students to ways of answering interview questions that are different from or better than theirs. Students like P27 felt motivated to practice more to prepare for future interviews: "It would really benefit me because over time and with a lot of practice it will help me problem solve intricate questions and build analytical reasoning for interview questions when I apply to data analytics roles." Students also shared what they learned about the interview preparation process during the lesson including, "the level of preparation needed [for an interview]" (P64), "[the] concepts I need to work on to get myself ready for such interviews in future" (P46), and "what I should focus on in order to get prepared for a real SQL interview" (P15).

6.3 Suggestions for Improvement

Students also provided suggestions on how to enhance the lesson, including incorporating additional practice and designing peer discussions and collaborations. Such improvement might better prepare them for the demanding requirements of SQL technical interviews.

6.3.1 Additional Practice. This lesson provided students with insights into the requirements for technical interviews, motivating them to better prepare for future technical interviews and to wish for additional practice. For example, P24 planned to "practice more on websites and continue going over the terminology behind important SQL concepts." P27 shared that "I didn't understand how to work through some of the SQL syntax … to find the parts of the question that was being asked for. I feel like over time with practice this would become much easier for me."

6.3.2 Interactive Engagement and Collaboration With Peers. Some students suggested that incorporating peer collaboration and interactive engagement into the lesson would further prepare them for future interviews. For example, P28 suggested the need for "more opportunities for students to practice mock interviews in smaller groups so they can be more engaged … and receive meaningful feedback" from peers. Similarly, P40 would have liked the lesson to be more interactive while P47 suggested it would be valuable to have an in-person interview rather than a recorded one.

7. IMPLICATIONS

These promising findings show that SQL mock interviews may enhance student confidence in their SQL higher-order thinking skills and their intention to continue learning and using SQL in the future. Beyond academic learning, the mock interview format also enhanced students' confidence in their ability to perform well in real SQL interviews.

First, the lesson offers a novel way for introducing higher-order thinking skills in SQL learning. Traditionally, SQL education emphasizes applying knowledge, critical thinking, and creative thinking through scenario-based projects (Renaud & van Biljon, 2004). While these are valuable and practical approaches, these activities do not always clearly convey their relevance to real-world contexts. Our study shows that engaging students in an authentic task – like a mock interview – can effectively demonstrate the practical relevance of course content, thereby motivating students to engage more deeply at the *application* level. Applying course concepts to interview-style questions served as a review that reinforced learning and clarified complex ideas. Additionally, technical interviews often require candidates to propose novel solutions to unfamiliar problems, presenting a rigorous test of their knowledge mastery, thus inherently challenging students' *creative thinking*. Our results indicate that the mock interview format boosted student confidence in SQL interview performance, regardless of whether they were able to solve the questions or not. For those who struggled with solving the questions, they benefited from the interview experience and learned about the expectations and question types for SQL interviews. Further, the mock interview also helped students identify both their strengths and areas in need of improvement, which may explain the increase in both confidence and motivation to continue studying SQL. Critically identifying their areas for improvement also provides opportunities for exercising their *critical thinking.*

Second, the lesson's novel approach bridges the gap between course content and career readiness, particularly in developing students' technical interview skills. In many technical programs, these areas are separate: faculty focus on teaching the technical skills while career centers offer general job search support. However, students benefit from interview preparation that is directly tied to their coursework. The mock interview lesson meets this need by combining technical skill application with insights into real-world interview expectations, reinforcing the career relevance of the course material. Our findings also highlight the diversity of students' technical interview experiences. For those new to the process, the mock interview provided a valuable introduction to the expectations and preparation needed for technical interviews; for those with prior experience, the mock interview reinforced their understanding of technical interview expectations and the importance of interview preparation. Regardless of their background, students reported an increased awareness of the amount of time and effort required to succeed in a technical job interview. Students also shared that the mock interview illustrated how the SQL skills learned in class could be applied in their future careers, motivating them to engage more seriously with the material.

Although the mock interview presented here was designed for a 75-minute database class, this lesson can be easily adapted to suit classes of different lengths and topics. For example, instructors could cover less of the interview or save the class discussion for another day. They can also choose a different video to meet their course needs. Those seeking a more in-depth coverage of SQL could repeat the activity multiple times focusing on different SQL topics and problems. The mock interview pedagogy could also be implemented in other technical courses on topics such as data analysis, programming, and cloud computing, although this would require instructors to find a topic-appropriate video interview or develop one themselves.

Our study is not without limitations. First, all items are self-reported. Although we ensured confidentiality and anonymity

before administering the survey to reduce the influence of social desirability bias, future studies could assess objective measures of student performance to further mitigate this bias. Second, we used a convenience sample for data collection as only students enrolled in the course were invited to participate in the lesson. Future studies could collect data from a wider-range of participants to test the generalizability of our findings. Third, our survey items focused on learning confidence, future learning intention, and interview confidence. Incorporating items of the taxonomy proposed by Bloom (1956) in future studies could deepen our understanding of this pedagogical approach. Fourth, we utilized only one publicly available YouTube video, using five out of the six tasks presented in the video. In follow-on studies, researchers could further assess this lesson's effectiveness with alternative tasks and/or interviews.

8. CONCLUSION

This paper presents an in-class learning lesson that engages IS students in an SQL mock interview lesson. In our implementation, we found that students expressed enhanced confidence in their SQL learning and an increase in their intentions to use and learn SQL in the future. They also reported a heightened interest and confidence in SQL-related technical interview skills. This Teaching Tip aims to provide an example of how mock interviews can be a feasible pedagogy for imparting both technical and career-related skills. We hope our work will inspire other instructors to explore a similar pedagogy in their own technical classes.

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APPENDIX

An Example of Student Submission

- *Data Scientist Candidate*
    - *Which marketing channels are most effective*

Attribution table

- *Sesssion_ID STR*
- *Marketing_channel STR*
- *Purchase_Value FLOAT*

User_Sessions Table

- *Session_id STR*
- *Ad_click_timestamp DATETIME*
- *User_ID str*

(mapping to course materials: relational data model, data types)

1. **What is the average purchase value by the marketing channel?**

Select marketing_channel, avg(purchase_value) as "Avg_PurchaseValue_By_Channel"
From attribution Group by marketing_channel Order by marketing_channel;

- *Selected marketing channel, average the purchase value of each particular marketing channel's sessions*
    - *Displays the columns or "data" we expect to see*
        - *Expect to see each marketing channel and their average purchase values*
- *"From attribution" → allows us to pull data fr*
- *Grouped by marketing channel*
    - *Each marketing channel participates in multiple sessions → must group by each unique channel to find the average purchase of ALL its purchase value*

(mapping to course materials: select statement; using column alias, aggregate functions, group by clause, order by clause)

2. **What % of link clicks convert to a purchase for each marketing channel?**

Select marketing_channel, avg(purchase_value) as "Avg_PurchaseValue_By_Channel", avg(case when purchase_value > 0 then 1 else 0 end) as "Conversion_Rate" From attribution Group by marketing_channel Order by avg(case when purchase_value > 0 then 1 else 0 end) desc; (mapping to course materials: select statement; using column alias, aggregate functions, group by clause, order by clause, case expression)

3. **What is the lifetime value for each user?**

- *Customer Lifetime Value → total value for each customer in the database*

Select user_id, sum(purchase_value) as "Lifetime_Value" From attribution join user_sessions using (session_id) Group by user_id Order by sum(purchase_value); (mapping to course materials: select statement; using column alias, aggregate functions, group by clause, order by clause, table joins)

4. **What is the lifetime value for each user? Define high value users as users with CLV > 100**

Select user_id, sum(purchase_value) as "Lifetime_Value" From attribution join user_sessions using (session_id) Group by user_id Having sum(purchase_value) > 100 Order by sum(purchase_value); (mapping to course materials: select statement; using column alias, aggregate functions, group by clause, having clause, order by clause, table joins)

5. **First touch attribution for all high value customers**
    a. **What marketing channel they first encountered the product**

Create table High_Value AS (Select user_id, sum(purchase_value) as "Lifetime_Value" From attribution join user_sessions using (session_id) Group by user_id Having sum(purchase_value) > 100 Order by sum(purchase_value));

    b. **Gets high value customers**

Create table First_Session AS (select user_id, min(ad_click_timestamp) From user_sessions Group by user_id);

    c. **Gets the session (ad_click_timestamp) customers clicked on first**

Select f.user_id, a.marketing channel From first_sessions f join high_value h on f.user_id = h.user_id join user_session u on u.user_id = f.user_id join attribution a on u.session_id = a.session_id; (mapping to course materials: using create table statement to duplicate data tables, select statement; using column alias, aggregate functions, group by clause, having clause, order by clause, table joins)

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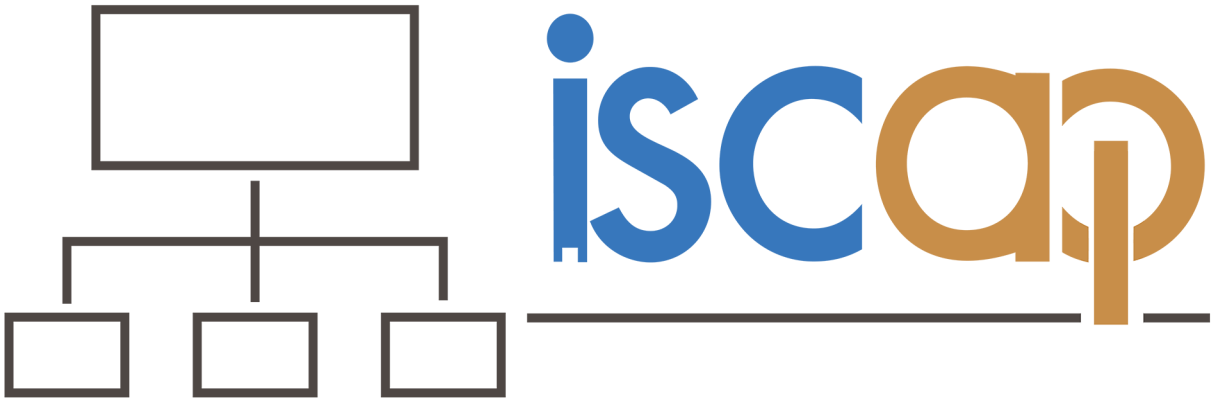

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