LESSON 104

Planning and Design

120 minutes (3 periods) | Coursework Project Preparation | Outcome 1.19 | Outcome 1.15 | Outcome 1.21 | Outcome 1.23 | Outcome 3.1 | Outcome 3.14

WHAT THIS LESSON DOES

Please note: this module follows the 2026 project brief, whose theme was forests. The State Examinations Commission publishes a new brief each year, with its own theme and its own dates. These lessons will be updated once this year's brief is published. Check the current brief on the SEC website before you begin. In this lesson, you will develop a complete Plan and Design section for your project report, approximately 600 words and worth 18 marks. You will evaluate at least two alternative ideas with justifications, identify stakeholders and end-user needs, list specific technologies, and create a high-level system architecture flowchart. By the end, your planning document will be ready for…

CURRICULUM OUTCOMES

Outcome	What the specification asks for
1.19	identify features of both staged and iterative design and development processes
1.15	consider the quality of the user experience when interacting with computers and list the principles of universal design, including the role of a user interface and the factors that contribute to its usability
1.21	identify alternative perspectives, considering different disciplines, stakeholders and end users
1.23	reflect and communicate on the design and development process
3.1	understand and list user needs/requirements before defining a solution
3.14	design automated applications using embedded systems

WHAT STUDENTS SHOULD BE ABLE TO DO

- Develop a comprehensive plan and design section for a technology project, meeting specified word count and marking criteria.
- Evaluate multiple project options, justifying the selection of the final design through structured analysis.
- Identify key stakeholders and articulate their specific end-user needs relevant to the project theme.
- Specify and justify the selection of appropriate technologies, including hardware, software, and components.
- Create a high-level system architecture diagram or flowchart illustrating project components and data flow.

BEFORE THE LESSON

- Confirm draw.io (diagrams.net) or Google Slides opens through the school filter so students can build and export their flowchart as an image.
- Have students' project folders and any earlier planning notes accessible so the section can be saved alongside their other report files.
- Read the current official Coursework Project brief yourself so you can confirm the four required elements and the 18-mark allocation match this year's wording.

Planning and Design

HOW THE LESSON RUNS

- Objectives
- What the Official Brief Requires for This Section
- Considering Different Project Options
- Stakeholders and End-User Needs
- Technologies You Will Use
- System Architecture / High-Level Flowchart
- Writing the Full Plan and Design Section
- Checklist Before Next Lesson

TEACHING MOVES

- 2. What the Official Brief Requires for This Section. Put the four bullet points on the board and keep them there all lesson. Make explicit that each maps to marks, so a missing element is lost marks, not just a weaker paragraph.
- 3. Considering Different Project Options. Insist on genuine alternatives, not a straw option chosen to be rejected. Push them to quantify pros and cons in euro or hours so the justification reads as analysis rather than opinion.
- 4. Stakeholders and End-User Needs. Have each student name a real person or role, not 'the user'. A need should be something the finished project actually delivers, so tie every need back to a feature they plan to build.
- 5. Technologies You Will Use. Check each named technology is one the school actually has and they can access. A Raspberry Pi 4 listed here but absent from the room becomes a problem later, so ground the list in available kit.
- 6. System Architecture / High-Level Flowchart. Show one worked example on screen, sensors to microcontroller to storage to output, then have them draw their own. Remind them to export as PNG and insert the image, not leave it in the diagram tool.
- 7. Writing the Full Plan and Design Section. Give the six-heading structure as a template and have them write under each in turn. Stress that justification of the final design is where marks are won, so it needs reasons, not a restatement of the choice.
- 8. Checklist Before Next Lesson. Walk the room and confirm each item is not just written but saved in the project folder. A flowchart still open in a browser tab is not saved work.

WHAT TO WATCH FOR

- Students treat the alternative options as a formality, inventing weak choices purely to reject them, which examiners read as no real evaluation. Ask them to defend why each option was plausible before they rejected it. If they cannot make a case for an option, it is not a genuine alternative and should be replaced.
- Listing technologies the school does not have or they cannot use, so the plan describes a project they cannot build. Have them tick off each listed item against hardware physically in the room before it goes in the table.

DIFFERENTIATION

- Emerging: Give the student the six-heading template and have them fill one heading at a time, starting with the technology table where the answers are most concrete. Pair them with someone who has a clear project theme so they can talk through stakeholders before writing.
- Developing: Prompt them to add quantified pros and cons to the options table, which lifts the analysis from description to justification.
- Proficient: Push toward the Higher Level treatment: have them link each design choice explicitly to both basic and advanced project requirements and to the 12-week timeline constraint. Ask them to annotate their flowchart with where data is stored and transformed, evidence they can reuse when defending design decisions in the project.