GCSE EXAMINERS' REPORTS

GCSE
BUILT ENVIRONMENT

SUMMER 2023

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Online Results Analysis

WJEC provides information to examination centres via the WJEC secure website. This is restricted to centre staff only. Access is granted to centre staff by the Examinations Officer at the centre.

Annual Statistical Report

The annual Statistical Report (issued in the second half of the Autumn Term) gives overall outcomes of all examinations administered by WJEC.

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UNIT 1: INTRODUCTION TO THE BUILT ENVIRONMENT

General Comments

This proved to be an accessible paper with Item Level Data showing that all questions were attempted by 100% of candidates. All content came directly from the specification with AI (Advance Information) being provided to centres as an aid to preparation prior to the written examination.

The cohort was more mature than the previous year with year 11 students sitting the exam for the first time. Male students account for 94.5% of entries with English medium candidates making up 95.2% of the cohort.

Comments on individual questions/sections

Q.1 This question was intended as an accessible introduction to the paper for the candidates with only short or one-word answers being required for all three parts of the question. A wide range of common responses would have been sufficient to gain marks but a mean mark of 2 out of 6 and a facility factor of 34.0% demonstrated a basic lack of subject content knowledge in the majority of candidates.

Q.2 Question 2 was again made up of 4 concise sub-questions that required the candidates to recall areas of straightforward subject content. Part (a) asked candidates to state examples of engineered wood products. Some were able to name common products such as OSB and Plywood but many confused actual materials with components such as beams and columns. A knowledge of the processes involved when working with concrete was generally evident with most candidates gaining marks for parts (b) and (c).The mean mark for this question was 3.3 out of 9 and the facility factor 36.5%.

Q.3 This question was well answered by the majority of candidates as shown by the mean mark of 3 out of 4 and the facility factor of 74.5%. Virtually all entrants were able to give a correct example of a building function with many gaining 3 or 4 marks.

Q.4 'Solar panels' was incorrectly offered by many candidates as an answer to part (a). Identification of the actual type of solar technology (thermal or voltaic) was required for marks to be awarded. Responses to part (b) were slightly improved with some candidates able to state a benefit and a limitation of the use of solar technology. The candidate's response to this question was disappointing with a mean mark of 1.3 out of 4 and the facility factor 31.9%.

Q.5 This was the first time in the paper that candidates were required to give a reason or to justify their answer to a question. Candidates were often able to identify a suitable type of building for parts (a) and (b) but in most cases were unable to give reasoned explanations for their choice. This proved to be a common theme throughout the paper. Item level data (a mean mark of 2 out of 4 and a facility factor of 49.7%), illustrates that nearly all marks were gained for the first 'identification' part of the question.

Q.6 Most candidates were able to name one role or activity of a site manager and bricklayer, whilst more comprehensive answers were fairly rare. To gain the full three marks available answers needed to describe three specific job roles and/or responsibilities carried out. The mean mark for the question was 3.3 out of 6 and the facility factor 54.3%.
Centres are reminded that all of the subject content necessary to fully answer questions on job roles in construction is included on pages 21 and 22 of the specification.

Q.7 This proved to be a comparatively accessible question with a mean mark of 6.5 out of 11 and the facility factor 58.7%. Centres seem to be familiar with teaching about health and safety issues such as the dangers of working at height and Personal Protective Equipment. Candidates showed satisfactory understanding in all parts of the question, but it should be noted that no marks were awarded for stating unspecific items of clothing such as boots, gloves and hats for part (d). Reference to specific items of PPE was required such as steel toe capped boots, safety boots and hard hats.

Q.8 Part (a) required candidates to state the advantages and disadvantages of brownfield sites. Responses often highlighted a confusion between the characteristics and relative merits of using greenfield and brownfield sites for construction.
Most candidates were able to identify suitable materials for reuse or recycling purposes. However, many lost out on extended marks due to an inability to explain the reusing or recycling method in sufficient detail.
The mean mark for this question was 2.6 out of 7 and the facility factor 36.7%.

Q.9 This was the second worst answered question on the paper. Most candidates gained 1 or 2 marks for part (a) with foam, wool and straw being the most common answers. For part (b), some appropriate types of cladding were suggested by the majority. However, descriptions of how the named materials met the brief requirements were often missing or very limited.
The mean mark for the question was 2.2 out of 9 and the facility factor 24.7%.

Q.10 This was the only question on the paper that called for an extended piece of writing by candidates. Marks were awarded here for quality of written communication. Candidates were required to read the question thoroughly and respond to the proposed scenario by composing a specification that discussed appropriate materials and components. The three considerations of the specification needed to be discussed namely, the external walls, secondary structure and roof finish of an industrial unit.

Many candidates demonstrated some knowledge of external walls and roof finishes, but a consideration of secondary structures as outlined in section 2.1.4 (b) of the subject specification was seldom included in candidate answers. Secondary structures were often misunderstood or misinterpreted by candidates and marks lost accordingly. A slight improvement in the breadth and depth of candidate's responses was noted in some centres but this is an remains an obvious area for attention in future.

Summary of key points

Centres are advised to:

- Encourage candidates to provide further detail and more concise justification in their responses to questions that are to be awarded 2 or more marks.
- Teach candidates to take more time to read and contemplate questions in detail, in order to fully understand what exactly is being asked of them.
- Give their students opportunities to practise answering questions prior to sitting the exam. Questions that call for an extended piece of writing, such as this year's question 10, continue to be poorly answered by many candidates.
- Use the three past papers (2022, 2023 and the Sample Assessment Materials) that are now available on the WJEC website to support candidate revision for this Unit 1 examination.

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UNIT 2: CREATING THE BUILT ENVIRONMENT

General comments on Pathway A:

This was the first occasion on which this unit pathway has been assessed. Candidate work was internally assessed by centres prior to a sample being presented for external moderation by the WJEC.

This board-set task is about the design of a single storey extension for a community hall. Centres are permitted to modify the board-set task or to devise a context of their own. A number of centres decided to create their own contexts and in all cases the design tasks presented for moderation were appropriate and allowed their candidates to gain marks in each section of the marks scheme.

Comments on individual questions

(a) Identifying and calculating information:
This section involves an analysis of the outline scenario in order to specify suitable materials and the type of construction that could be used to realise the candidate's final design proposal. Calculations relevant to the design proposal also needed to be included. This aspect of the mark scheme was not always considered in sufficient depth and calculations were often spread throughout the design portfolio rather than being collected and presented for assessment in logical order.

(b) Writing and setting success criteria:
The mark scheme clearly sets out a requirement for success criteria to consider issues related to tolerance, timescale and quality and to be objective and measurable. The best examples presented by centres were concise and gave realistic parameters to the candidate's design work as well as providing a framework for the evaluation of the completed design proposal.

(c) Drawing plans and elevations:
Overall attainment was improved in this area. The majority of candidate's time and effort had obviously been spent on these activities. A variety of appropriate software was used to communicate the necessary plans, cross-sections and elevations. Computer-generated software was used in all cases with no centres presenting evidence in the form of hand-produced drawings.

(d) Drawing two-dimensional plans and three-dimensional virtual models and plans:
Most candidates demonstrated proficiency in creating three-dimensional virtual models of their individual design proposals. In general, a good range of skills was shown in manipulating a range of software, such as 'Autodesk Revit' and 'Google Sketch Up'. Screenshots of the candidate's final design proposal were presented for moderation purposes.

(e) Using the language of drafting:
Overall, candidates work followed the necessary British Standards and conventions as well as being presented in an appropriate scale.

(f) Evaluating the design task:
This is an area in which attainment could be improved in future with candidates often presenting very brief or simplistic evaluation reports. In many cases this seemed to be a direct consequence of the limited success criteria set out earlier in the project. The mark scheme clearly calls for the evaluation report to consider the requirements of the brief, success criteria, end users and suggestions for possible improvement.

Summary of key points

Centres are advised to:

- Further familiarise themselves with the assessment criteria and encourage candidates to structure their project work in the order of the assessment criteria.
- Think carefully about structuring the project work so that, where possible, it follows the linear pattern of the assessment criteria. This would aid both centres and students to ensure that they are meeting the assessment requirements. The work of some centres jumped back and forth between different parts of the mark scheme and in the cases where there was little teacher commentary the process of accurate assessment was made difficult.
- Use the board-set scenario or devise their own scenarios that closely follow the pattern of the board-set scenario. Some centre-devised scenarios presented the candidates with too much information relevant to the design which prevented them from being able to interpret and model the scenario to their own needs. There is a need for an ‘outline’ task scenario rather than an ‘over-prescribed’ scenario that can limit candidate attainment.
- Improve their student’s knowledge of setting and writing success criteria. This in turn should also help to improve the quality and depth of the student’s evaluations of the completed design proposal.
- Justify assessment decisions made in the associated documentation.

General comments on Pathway B:

This was the first occasion on which this unit pathway has been assessed. Candidate work was internally assessed by centres prior to a sample being presented for external moderation by the WJEC.

This board-set task is about the construction of an extension for a youth hostel. Centres are permitted to modify the board-set task or to devise a context of their own. A number of centres did decide to create their own contexts and in all cases the construction tasks presented for moderation were appropriate and allowed their candidates to gain marks in each section of the mark scheme.

Comments on individual questions

(a) Interpreting technical sources of information identifying resource requirements calculating materials required:
Resource requirements such as tools, equipment and PPE were generally identified and outlined in some detail by candidates. The mathematical calculation of material quantities not always given sufficient emphasis.

(b) Writing and setting success criteria:
The mark scheme clearly sets out a requirement for success criteria to consider issues related to tolerance, timescale and quality and to be objective and measurable. The best examples presented by centres were concise and gave realistic parameters to the candidate's construction activities as well as providing a framework for the eventual evaluation of the completed work in the two chosen trade areas.

(c) Planning and organising work working practices that promote health and safety:
The best examples moderated used appropriate planning methods such as Gantt or Flow charts to present a sequence and timeline for the manufacture of the construction tasks. Teacher comment on health and safety working practices was helpful here in highlighting matters to do with cleanliness, safety of work areas and the appropriate use of correct PPE.

(d) Preparing for construction tasks removing and disposing of materials:
Preparation tasks (such as properties, stock forms and sizes) were cross-referenced in the resource requirements identified in section (a) by some centres. This is another area in which teacher comment can be helpful to highlight candidate attainment in the processing and safe disposal of the materials during the construction phase.

(e) Carrying out techniques:
The techniques chosen by all centres were appropriate and challenging to candidates. This was true of centres that chose to follow the WJEC set context or centres that decided to develop their own. Photographic evidence of the two completed construction tasks is an essential requirement here.
A step by step 'diary' of work progress is not necessary but clear photos showing details of the 2 completed trade area activities are essential. Teacher comment and justification also supports the photographic evidence and aids accurate moderation.

(f) Evaluating the construction tasks:
This is an area in which attainment could be improved in future with candidates often presenting very brief or simplistic evaluation reports. In many cases this seemed to be a direct consequence of the limited success criteria set out earlier in the project. The mark scheme clearly calls for the evaluation report to reflect on the requirements of the brief, success criteria, end users and suggestions for possible improvement.

Summary of key points

Centres are advised to:

- Further familiarise themselves with the assessment criteria and encourage candidates to structure their project work in the order of the assessment criteria.
- Think carefully about structuring the project work so that, where possible, it follows the linear pattern of the assessment criteria. This would aid both centres and students to ensure that they are meeting the assessment requirements. The work of some centres jumped back and forth between different parts of the mark scheme and in the cases where there was little teacher commentary the process of accurate assessment was made difficult.
- Use the board-set scenario or devise their own scenarios that closely follow the pattern of the board-set scenario. Some centre-devised scenarios presented the candidates with too much information on material calculations and quantities which prevented them from being able to interpret and model the scenario to their own needs. There is a need for an 'outline' task scenario rather than an 'over-prescribed' scenario that can limit candidate attainment.
- Improve their students understanding of setting and writing success criteria. This should also improve the quality and depth of the students' evaluations of the completed design proposal.
- Provide clear photographic evidence to support candidate attainment in section (e) carrying out techniques. Photographs need to provide detail of the two completed construction tasks.
- Justify assessment decisions made in the associated documentation.

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UNIT 3: EXPLORING THE BUILT ENVIRONMENT

General Comments

This was the first occasion on which this unit has been assessed. Candidate work was internally assessed by centres prior to a sample being presented for external moderation by the WJEC.

Candidates were required to select two relevant buildings in their local built environment on which to produce a case study. Without exception, the work presented for moderation met the requirements of the assessment criteria in respect to the characteristics of the buildings identified for study.

Comments on individual questions

(a) Planning and design stages of buildings and structures construction processes:
Most candidates displayed some knowledge of how their chosen built environment has been planned and constructed to meet given needs. The most successful were able to apply this knowledge to RIBA Stages 0 to 5 and gained marks accordingly.

(b) Well-being of communities:
Candidates are asked to analyse the contribution made by the chosen contemporary building to their community. Candidates who worked methodically through the four factors required in the mark scheme (social, economic, environmental and cultural impact) were able to access marks in the higher bands of the assessment criteria.

(c) Post-occupancy evaluations:
This section highlighted the importance of centres establishing a strong link with a contemporary building and its occupants. The information that is required for candidates to present their conclusions on a buildings impact can only be gained through a site visit or correspondence between building and centre.

(d) Building maintenance and repair, change of use:
Again, candidates at those centres that succeeded in establishing a meaningful link with a nearby contemporary building seemed to perform well in this section of the mark scheme. The use of ICT skills and techniques throughout the case study was also adjudged and awarded marks in this section.

(e) Changing practices:
A comparison of the design and construction of a contemporary and heritage building was carried out by candidates with a variety of effective methods being used to present findings. Some candidates chose to present the work in the form of a table, directly comparing the material and construction characteristics of the two buildings. Photographs were often included to illustrate aspects of the buildings and and their relevant features.

Summary of key points

Centres are advised to:

- Establish strong links with the two buildings chosen for the case study. The best work produced by centres showed clear evidence that their students had made site visits and kept in contact throughout the period of composing the case study.
- Aid their students in preparing detailed questionnaires prior to the site visits in order to gain relevant feedback from the owners, occupants and constructors of the buildings.
- Justify assessment decisions made in the associated documentation.

WJEC
245 Western Avenue
Cardiff CF5 2YX
Tel No 029 2026 5000
Fax 029 2057 5994
E-mail: exams@wjec.co.uk
website: www.wjec.co.uk