



Topic: Guitar Stand

Full Portfolio evidence

General Description: The candidate submits a 66-page portfolio looking at some slightly disparate starting points, they then 'hone' these starting points to move the proposal towards a multiple stringed instrument stand. We see the use of a real client throughout the process and therefore the candidate adopts an iterative approach to the work. The final product utilises a range of skills, tools and processes. The product and the candidate's methodology has a commercial feel to the work. Overall, the submission is of high quality.

Mod Mark

Grid 1: Investigation

Evidence

The candidate considers multiple possible areas to explore through the use of a mind map. (Slide 2) This is accompanied by primary research of potential problems experienced by users and brief analysis of existing solutions that exist. They demonstrate an investigation of potential problems; however, this is a little disparate including issue such as chicken welfare and fireside problems. (Slides 3-4). The client at this stage is rather vague.

They explore further avenues focusing on the area of chicken welfare through primary research and analysis of existing products (Slide 3). The candidate also questions users to see what problems they experience. The open nature of these questions identifies different areas that can be explored, but it may have been better to look at the area of music and musicians further with a specific client or user group rather than random disparate scenarios. **At this stage the candidate is not illustrating the iterative methodology required to access the highest levels of this criterion.**

The potential area is explored (guitar equipment) through the use of a mind map of problems the candidate does also enlist the client and users This is then followed with different users consulted as to the problems they experience to see if there is an overlap (Slide 5).

This direction is now pursued with justification provided (Slide 6) and design possibilities shown. Further discussion with the user with each of the possibilities helps to inform further direction of the project. The user/ client is questioned further to ensure their needs are thoroughly considered (Slide 7). This does demonstrate an investigation of their needs/wants to inform requirements.

It now feels like, despite a disparate start that the candidate has enough reality in terms of client engagement to access the higher levels in this criterion.

We see a preliminary design brief that reflects the information analysed so far. The candidate also looks at possibilities with the user and explores via an article, potential problems that may need to be considered with the end solution. (Slide 6)

This later section of the work is thorough and has some high-level quality.

It does render the earlier work somewhat redundant, that said there is enough client engagement to access a low level three for this criterion.

Level 3

<p>Grid 2: Analysis / Research</p> <p>Evidence</p>	<p>There is a research plan in place with relevant research areas identified for multiple areas. Questions to be answered stated along with justifications and where the information can be gained (Slides 8 to 9).</p> <p>The candidate analyses and evaluates existing solutions (primary research, slides 10 to 11). And we do see some balance to the research in terms of a positive negative analysis. At this stage we do see some evidence of client engagement, and again this is commendable (Slide 10).</p> <p>This research is accompanied by secondary analysis of further products, on slide 12, and evaluative comments are also provided which leads to a conclusion that mentions specifically some final requirements.</p> <p>At first glance the anthropometric data looks to be a little generic, but the candidate researches some specific anthropometric information relevant to the project and analyses key data points to help inform design decisions for example optimum heights to pick up a guitar (Slide 13).</p> <p>Further surveys are completed to analyse the clients' opinions. This includes images of the product location (Slide 14)</p> <p>Relevant standards have been identified, and useful information has been used to inform direction (Slide 15).</p> <p>Key measurements of instruments and equipment have been recorded (Slide 15, 16).</p> <p>This gathering of data is, relevant and potentially influential and so the candidate is moving towards the higher levels in this criterion.</p> <p>We do see some research completed into sustainability issues as well as level of production (Slide 17).</p> <p>An image board is created to help inform the form of the product (Slide 18) but we are not really sure what this achieves. The candidate does try to summarise the research findings, but it is a pity that the client is not engaged more purposefully.</p> <p>Overall, the investigations are of a good standard this just feels like a borderline case, at level 3 to 4, the award was just at level 4</p>	<p>Level 4</p>
<p>Grid 3: Specification</p> <p>Evidence</p>	<p>n this section the candidates should produce a design brief that reflects the investigated needs, wants and values of the client/end user. The specification points should be realistic, technical and measurable.</p> <p>The design brief has been re-worked on slide 19. It is relevant and draws upon aspects seen in the research especially for instance the requirement to house several different stringed instruments. Furthermore, we also see the candidate responding to the client in terms of research and location of the product.</p> <p>The specification has measurability, and all of the points are justified with reference given to research undertaken in places.(Slide 20-21)</p> <p>The evaluation test column also points towards measurability, including technical points provided (e.g. size of instruments, temp and humidity of the product environment, adaptable to radiator vent, etc)</p> <p>The candidate does submit a comprehensive design brief but the submission would benefit from a more comprehensive contribution from the client or interested stakeholders.</p> <p>Overall, this is a Level 3 submission.</p>	<p>Level 3</p>

<p>Grid 4: Design ideas</p> <p>Evidence</p>	<p>In this section candidates should use varied design strategies to create practical, client/specification-driven ideas. They are expected to think commercially, apply technical skills and materials knowledge, and support their choices with prior and additional research. Imagination is essential, drawing inspiration from sources like nature, industry, design movements, and new technology.</p> <p>The candidate uses some strategies to generate ideas, e.g. limited use of inspiration materials. This includes involving the views of the client and what they would like to see in the solution before being developed into workable solutions by the designer (Slide 22). The client draws some concept ideas clearly indicating that engagement is ongoing.</p> <p>Various graphical methods have been used to communicate ideas. This includes overlaying sketches/imagery, isometric drawings, exploded views, etc. Sketch modelling has also been used to confirm the form of potential ideas.(Slide 25).</p> <p>Annotation names specific materials that could be used (highlighted).</p> <p>Specific processes are also named (e.g. sheet roller, centre lathe)(highlighted).</p> <p>The annotation also makes reference to specification points that have/have not been met. There is a review of the ideas which does help in terms of adherence to the specification parameters.</p> <p>Evidence of key user needs being met (typed text boxes).</p> <p>There is also a very limited reference to historical influences (e.g. Bauhaus inspired minimalist design). Slide 25.</p> <p>Consideration of sub sections of the designs demonstrate some technical understanding, along with the addition of technical annotation.</p> <p>That said the ideas do lack some depth and sophistication, we do not really see the candidate exploring possibilities and there is only limited iterative discussion with the client. The candidate should have, more clearly, illustrated alternatives both holistically and in detail and then conducted return to client discussions. This would have been a perceptive approach.</p> <p>The award in this section is at level 2.</p>	<p>Level 2</p>
<p>Grid 5: Development</p> <p>Evidence</p>	<p>The development section appears to be a little stronger with the candidate undertaking relevant modelling and some more meaningful client dialogue.</p> <p>There are some concluding comments about the relative success of each idea along with opinions from the client (demonstrates iterative nature being adopted) (Slide29). This can influence the 'review of development section'.</p> <p>Foam modelling is used to manufacture test pieces. These are tested with the components to be stored and changes are made; this does show a level of a perceptive approach. Client feedback is also sought about the current form and potential developments. (Slide 30).</p> <p>Overall form/height of the product is considered through the construction of a model (Slide 31). This is tested with products to be stored, and client feedback is sought. This type of modelling tests aspects of the proposal and illustrates an iterative approach.</p> <p>The candidate also explores manufacturing methods. This includes testing with different adhesives and the possible use of wrapping a veneer around a frame structure to create the central column (Slide 32). Finishes are also considered Slide 37.</p>	<p>Level 3</p>

	<p>Evidence of ongoing research through the use of secondary research to explore potential manufacturing methods using a researched video and components that need to be bought in (e.g. lazy Susan) (Slide 33). There is also further evidence of user opinions being sought.</p> <p>Further test pieces made to explore the function of the sliding guitar mechanisms and further research to help inform decisions (Slide 34).</p> <p>The work has some detail however the exploration of materials and processes is a little lacking and rather simplistic as is the analysis of the client input. The keywords in the assessment criteria are helpful here in that although the client input lacks sophistication, some of the modelling is perceptive.</p> <p>This is a low level 3.</p>	
<p>Grid 6: Final design</p> <p>Evidence</p>	<p>In this section, candidates must provide enough manufacturing details for a third party to reproduce the design. This includes final drawings, complete material and component lists, relevant part or exploded views, an overview of manufacturing processes, and notes on any sustainability considerations.</p> <p>The working drawings provided give most details of the key components (Slide 38 to 39). These are accompanied by annotations that name the material and key manufacturing processes to be used.</p> <p>Exploded view given (Slide 40) that is linked to cutting list, this is helpful in terms of the third party manufacture</p> <p>Cutting list provided with all dimensions and materials stated. Tolerances also given for the purpose of material preparation.</p> <p>We see a detailed breakdown of costs for the materials along with information concerning parts to be bought in</p> <p>Production plans (Slide 46-49) provided which outlines key manufacturing stages and the required tools/equipment. Consideration also given to sustainability issues which also highlights how waste can be minimised (e.g. Slide 48).</p> <p>Overall, this is a good performance, with some issues regarding process that are omitted and sometimes the work is slightly rambling such as the work on stock and availability. E.g. Slide 45.</p> <p>The award here is level 3.</p>	Level 3
<p>Grid 7: Review</p> <p>Evidence</p>	<p>In this section the candidates are expected to produce an analysis of the design changes throughout the folder. These should be balanced offering pros and cons to suggested materials and processes using technical language and offer an opinion of the client's comments.</p> <p>There is some evidence of ongoing client input during the development of ideas which leads to further changes, summarising comments of the changes made during the development and the need for them.</p> <p>We also see modifications summarised on (Slide 43) with some reference to the client requirements.</p> <p>The candidate offers further analytical comments provided on how the final design meets the specification criteria but feels like a little more balance is needed and the commentary is rather descriptive.</p> <p>Evaluation is done as part of this analysis through the use of colour coding to indicate where the design has fallen short. (Slide 44). However, the work does lack real analysis, and relevant realistic return to client input.</p> <p>The review needs further balance; the work is not perceptive and comprehensive.</p>	Level 3

<p>Grid 8: Communication</p> <p>Evidence across portfolio</p>	<p>Various graphical techniques have been used to communicate ideas. This includes the use of 'thumbnail' sketches, isometric, exploded views, overlaying drawings (Slide 23 to 26)</p> <p>Modelling techniques have been used well to explore form and function of the intended design.</p> <p>CAD has been used to confirm final forms of components. This includes exploded views of the final design (linked to cutting list) and working drawings.</p> <p>Accomplished use of CAD to provide these drawings. This includes the use of rendering to indicate material combinations.</p> <p>Ideas are expressed clearly throughout we see the use of accurate terminology and written techniques; the only issue here is the slight naivety of the sketched work. The award is at level 3.</p>	<p>Level 3</p>
<p>Grid 9: Tools & Equipment</p> <p>Evidence</p>	<p>In this section, candidates are required to show appropriate selection and use of tools and equipment, demonstrating an understanding of the materials involved and providing justification for their choices. The selected processes should support the effective manufacture of the prototype and ensure that the outcome is dimensionally accurate.</p> <p>Workshop diary can be found on Slides 49 to 55.</p> <p>The candidate used the centre lathe to create mild steel supports for the rotation mechanism. These were faced off, parallel turned and knurled. Threads were added using appropriate stocks and dies (Slide. 49).</p> <p>They manufactured a template (laser cut) to help with woodturning accurate components.</p> <p>All columns were turned by the pupils using appropriate gouges and chisels (Slide. 49).</p> <p>Base mechanism was created using the bandsaw and holes drilled using a hand drill to allow the addition of the lazy Susan. Circles were finished to size using the disc sander (Slide. 50). The edges of the mahogany base were finished using a router.</p> <p>Plywood guitar holders were cut using the bandsaw and finished using the disc and bobbin sander (Slide 51). The edges of these were finished with a router.</p> <p>Aluminium discs were manufactured using the centre lathe. These were faced off, drilled, bored and parted off. A thread was also added to allow the addition of the mild steel components (Slide. 52)</p> <p>CNC machine was used appropriately to create the aluminium forks. These had internal threads added to allow them to be fixed to the central disc (Slide. 53)</p> <p>CNC router was also used to create final for central column.</p> <p>Laser cutter was further used to create acrylic disc spacers.</p> <p>Reference to specific H&S rules applied during manufacturing processes is shown through highlighted text in the workshop diary. H&S considerations are also outlined in this demonstrating awareness of necessary controls.</p> <p>In this case we are seeing a broad range of tools and equipment used effectively and appropriately. The final product demonstrates dimensional accuracy.</p> <p>This is a Level 4 award</p>	<p>Level 4</p>

<p>Grid 10: Quality & Accuracy</p> <div>Evidence</div>	<p>This section should show advanced making skills, resulting in an accurate, high-quality prototype that meets end user needs.</p> <p>See pages 49 to 55 along with accompanying photos of completed prototype (56)</p> <p>Prototype functions as intended.</p> <p>Three guitars can be held, and picks and other accessory storage is available at the top of the central column.</p> <p>The guitar holders rotate around the base of the central column to accommodate different guitar sizes.</p> <p>The whole base can rotate through the use of a lazy Susan mechanism.</p> <p>The prototype is finished to a very high standard - all central columns show excellent dimensional accuracy given they were created on a woodturning lathe.</p> <p>Aluminium pieces also show high dimensional accuracy.</p> <p>Edges of timber (base, plywood supports) have been finished with a router these do look a little unfinished in some photos.</p> <p>Danish oil has been applied to all timber-based parts.</p> <p>Aluminium sections have been polished.</p> <p>There is a thorough description of changes made during the manufacture of the product that show iterative design (60 to 61). This is to be commended.</p> <p>This is a very good example of a relatively compact product that has the range of skills at this level fully functioning prototype, this is a level 4 award.</p>	<p>Level 4</p>
<p>4.1 Testing and evaluation</p> <div>Evidence</div>	<p>There are limited analytical comments provided concerning the Life Cycle of the prototype (Slide. 57).</p> <p>The analytical comments provided against each specification criterion are somewhat descriptive not really an analysis. That said we do see evidence of appropriate testing being conducted, the product is put into service.</p> <p>Client feedback is provided during this testing, especially on Slides 62 and 63, and we see further evidence of testing with the user and in the intended environment.</p> <p>There is some reference to the social, moral and environmental issues raised with the construction of the prototype (Slide. 62).</p> <p>Further testing with the client is shown and their feedback is sought. This leads to summarising thoughts on how the product could be developed further (Slide. 64). Illustrating some iterative elements, the work has some comprehensive elements to it along with real testing</p>	<p>Level 3</p>
<p>Total</p>	<p>This is an A grade. It has something of note in each grid and a sound manufacture phase.</p>	<p>A/A* Grade</p>