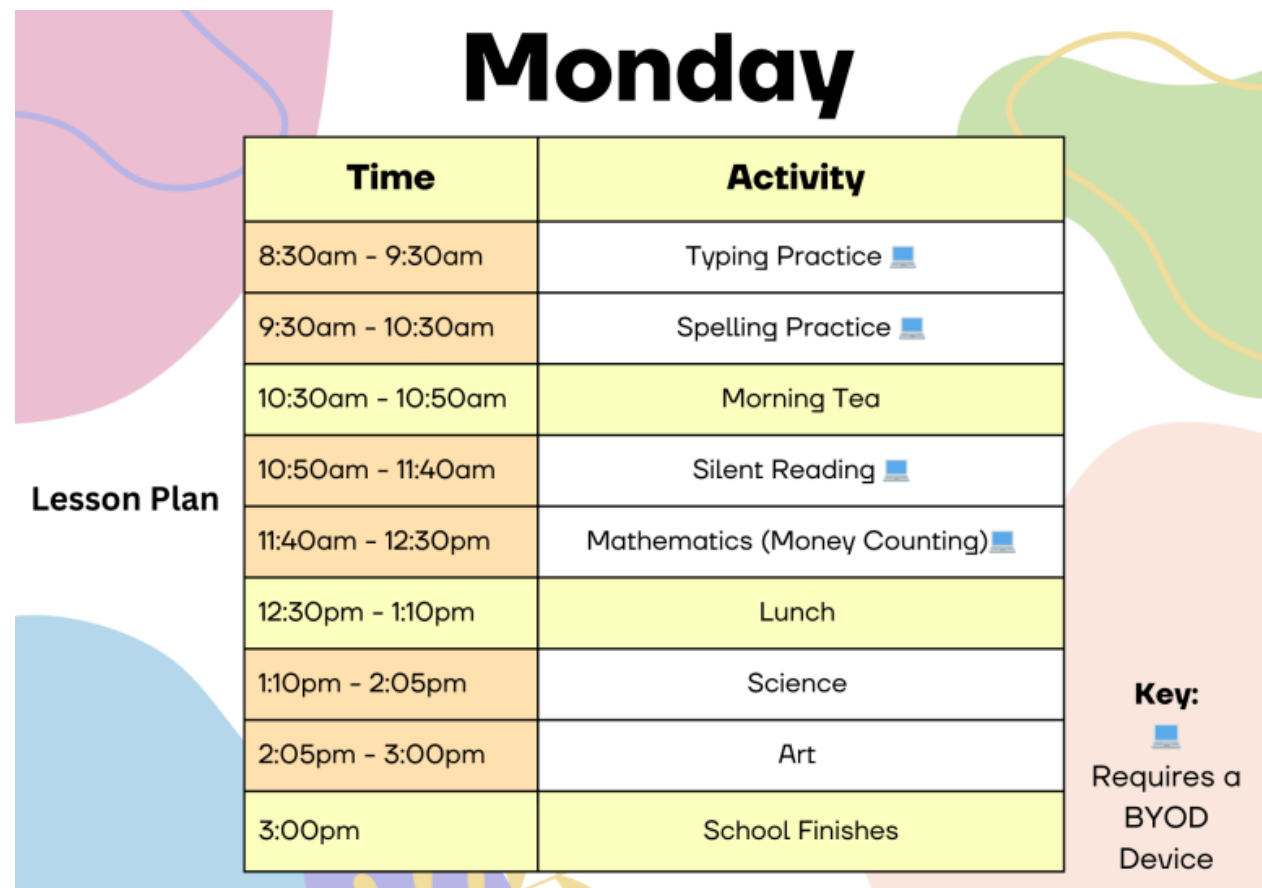


Case Study: Consolidate Your Understanding of BYOD and Ergonomics





Miss Honey works at a state primary school located in Townsville, Queensland, which has implemented a Bring Your Own Device (BYOD) program in all their classrooms this year. It has been in effect for two terms so far. The school serves a diverse community with varying socio-economic backgrounds and has made limited financial investment in ergonomic practices. The principal of the school is known for being approachable and has fostered a supportive environment for both students and staff.

Miss Honey's grade 5 class consists of 20 students, each using either a laptop or a tablet as part of the BYOD program. The classroom is furnished with standard one-size chairs and desks with tidy trays arranged in a traditional line layout. Due to the amount of content Miss Honey aims to incorporate into her lessons each day, her students only have a break from learning during designated morning tea and lunch periods.




The image shows a lesson plan for Monday. It features a central table with two columns: 'Time' and 'Activity'. The activities include Typing Practice, Spelling Practice, Morning Tea, Silent Reading, Mathematics (Money Counting), Lunch, Science, Art, and School Finishes. Some activities are marked with a laptop icon, indicating they require a BYOD device. The table is surrounded by colorful abstract shapes in pink, green, blue, and orange. To the left of the table is the text 'Lesson Plan'. To the right is a 'Key' section with a laptop icon and the text 'Requires a BYOD Device'.

Monday

Time	Activity
8:30am - 9:30am	Typing Practice 
9:30am - 10:30am	Spelling Practice 
10:30am - 10:50am	Morning Tea
10:50am - 11:40am	Silent Reading 
11:40am - 12:30pm	Mathematics (Money Counting) 
12:30pm - 1:10pm	Lunch
1:10pm - 2:05pm	Science
2:05pm - 3:00pm	Art
3:00pm	School Finishes

Lesson Plan

Key:

Requires a BYOD Device

Since implementing BYOD devices, Miss Honey has observed a decline in her students' performance and participation. As Miss Honey has limited experience with the BYOD program and ergonomic practices, she has reached out to you for assistance as a fellow teacher. During your free period, you visit Miss Honey's classroom.



Please note: The original OER image contains additional audio to indicate that students are in a noisy classroom.

Question 1: From what you know, identify ergonomic issues that may affect the students' performance and participation in Miss Honey's classroom

Question 2: From what you know, identify factors that may affect ergonomic recommendations provided to students at this primary school

While in Miss Honey's classroom, you have also identified students who could benefit from ergonomic recommendations to improve their classroom participation. To gain additional information about three of these students, you discuss them further with Miss Honey.

James is an attentive student, actively engages in classroom activities, and demonstrates respect for Miss Honey. He is also the tallest student in his cohort. Due to his long legs, James' tidy tray has been removed from under his desk to provide more legroom. As a result, James' desk is cluttered with all of his books and stationery. Recently, James has also been complaining about neck, back, and shoulder pain when using his tablet which has made focusing on learning tasks more difficult.

Question 3: Identify the ergonomic factors that may be affecting James' performance and participation

Question 4: List and explain changes you would make to address these ergonomic factors affecting James' performance and participation

Charlotte is an eager learner and has developed a thorough understanding of proper posture due to both her parents being occupational therapists. Charlotte has low tone and uses various assistive technologies to meet her needs when using her tablet in class. These include a mouse, keyboard, footrest, specialised chair, and tablet raiser. Charlotte experiences headaches due to glare from her tablet which can add to her discomfort. She has also experienced cyberbullying via her school email address from classmates due to her use of assistive technology. Charlotte is therefore shy and has poor interpersonal skills.

Question 5: Identify the ergonomic factors that may be affecting Charlotte's performance and participation

Question 6: List and justify changes you would make to address these ergonomic factors affecting Charlotte's performance and participation

Oscar enjoys using his laptop in the classroom, is a curious student, and has a high level of energy. His energetic nature can manifest in behaviours, such as running around the classroom, which can interfere with his peers' and his own learning. Oscar also has difficulties grasping concepts as he experiences mental fatigue easily when completing classroom tasks. Therefore, Miss Honey has seated Oscar at the front of the classroom so that she is able to provide him with extra support. However, Oscar complains of feeling cold in this seating position as it is directly in front of an air conditioning unit. Fortunately, Oscar's anthropometrics are well suited to the classroom furniture and he always ensures his desk remains clear of clutter.

Question 7: Identify the ergonomic factors that may be affecting Oscar's performance and participation

Question 8: List and justify changes you would make to address these ergonomic factors affecting Oscar's performance and participation

You decide to also look at Miss Honey's lesson plan and feel she could make some changes to improve performance and participation in the classroom.

Question 9: What are some strategies Miss Honey can use to incorporate movement into her lessons?

Question 10: From the perspective of your role, what are some strategies you could use to increase key stakeholder (teacher/principal/parent/student) willingness to implement ergonomic recommendations?

Apply your knowledge

Think of a student or individual in your class and use the Occupational Therapy Ergonomic Assessment, Sensory Audit Checklist, and Teacher Guide to Setting up a Student's Ergonomic Learning Environment (which can be found in Unit 4 of the OER) to identify the ergonomic factors affecting their performance and participation. Following this, identify changes you can make and the actions required to implement these recommendations.

Case Study Answers

Question 1:

Ergonomic issues that may affect the students' performance and participation in Miss Honey's classroom:

- Noise Level: The noisy classroom environment disrupts students' learning and concentration.
- Poor Posture/Furniture Mismatch: The notable mismatch between the students' furniture and their ergonomic needs results in poor posture.
- Distracting Peers: The layout and lack of ergonomic consideration have led to students engaging in distracting behaviours, such as running around the classroom
- Teacher Knowledge: Miss Honey has limited knowledge regarding ergonomics when using BYOD devices in learning environments.
- Limited breaks: Miss Honey's class does not have breaks between lessons outside of morning tea and lunch time due to the amount of content she aims to incorporate into her lessons each day. Students may experience more discomfort due to a lack of regular movement.

Question 2:

Factors that may affect ergonomic recommendations provided to students at this primary school:

- Supportive Principal: As the school principal is supportive, they are more likely to assist with the implementation of ergonomic recommendations.
- BYOD policy being new: Teachers of this school may have limited experience with BYOD device use in their classrooms, meaning they may have reduced knowledge and skills regarding ergonomics when using BYOD devices.
- Limited financial investment into ergo: The school may not have the finances to support ergonomic recommendations that require considerable expense.
- Varying socio-economic backgrounds: There will be variation in the students ability to implement ergonomic recommendations that require an expense.
- Standard furniture: If the standard furniture is mismatched with a student's anthropometrics, accessories or different furniture will be required as it is unadjustable.

Question 3:

Ergonomic factors that may be affecting James' performance and participation:

- James' Knowledge: James has a limited amount of knowledge on ergonomic practices as demonstrated by his poor ergonomic behaviours.
- Teacher's Knowledge: Miss Honey has a limited amount of knowledge on ergonomic practices, and therefore, is unable to recognise poor ergonomic behaviours, provide suitable education to influence her students' behaviours, and make adjustments where required.
- Compliance: As James is an attentive student, he is more likely to comply with ergonomic recommendations that are taught to him.

- Height: James is a taller student, so he needs to remove his tidy tray from under his desk. His anthropometrics also don't suit the standard furniture.
- Posture: James' posture is negatively impacted due to the mismatch with the classroom furniture, causing neck and back pain.
- Furniture Mismatch: James requires a different desk and chair to align with his anthropometrics to ensure he is comfortable and able to participate in learning tasks to the best of his ability.
- BYOD Device Positioning: The height, distance, and angle of James' tablet is incorrect which is contributing to his neck and back pain.
- Workstation Setup: James had to take out his tidy tray due to his height, meaning his desk is cluttered and the setup of his desk is not efficient. This causes him to have to reach further for items he uses regularly, causing shoulder pain.
- Structure of Lessons: There are no additional breaks between lessons in Miss Honey's class outside of allocated morning tea and lunch breaks due to the amount of content she aims to incorporate into her lessons each day. This means that James may experience more discomfort due to a lack of regular movement.

Question 4:

To address these ergonomic factors affecting James' performance and participation:

- Provide Education to James: Educate James about the importance of ergonomics and the strategies discussed below, such as how to appropriately use the assistive technology provided to him. Provide James with a diagram demonstrating the correct seated posture to place on his desk to assist in his self-management.
- Increase Teacher's Knowledge: Educate Miss Honey about ergonomics and guide her towards resources she can use to obtain further information.
- Provide Suitable Furniture: Assess James' furniture needs and provide him with a desk and chair that offers better support and adjustability to accommodate his height. This will improve his posture, as well as reduce his neck, back, and shoulder pain.
- Rearrange Desk Set-up: Assess James' workstation and rearrange the items placed on top of his desk to have the most regularly used items within close reach to reduce shoulder strain.
- Consider Assistive Technology: James may benefit from using a tablet stand to position his tablet at the correct height and angle, as well as the use of a keyboard and mouse.
- Schedule Movement Breaks: Provide regular individual or whole-class movement breaks to assist in reducing James' neck, back, and shoulder pain.
- Collaborate with Stakeholders: Communicate with James and his parents about his discomfort and ergonomic needs. Collaborate with other key stakeholders such as the school principal for funding, and other available supports such as an occupational therapist.

Question 5:

Ergonomic factors that may be affecting Charlotte's performance and participation:

- Charlotte's Knowledge: Charlotte is proficient in using her assistive technology and maintaining proper posture.

- **Teacher's Knowledge:** Miss Honey has limited knowledge regarding ergonomic practices, and therefore, is unable to recognise poor ergonomic behaviours, provide suitable education to influence her students' behaviours, and make adjustments where required.
- **Physical Capacity:** Charlotte has low tone and will fatigue more quickly than her peers.
- **Compliance:** As Charlotte is an attentive student, she is more likely to comply with the ergonomic recommendations that are provided.
- **Family:** Charlotte has a supportive family who encourages her to practise good ergonomic behaviours.
- **Assistive Technology:** Charlotte utilises her assistive technology appropriately which improves her participation and performance in classroom activities.
- **Lighting/Glare:** The glare from her tablet causes discomfort and negatively impacts her ability to participate in learning tasks.
- **Classroom Culture/Individuals on the Internet:** Charlotte's classmates have been bullying her due to her use of assistive technology which is negatively affecting her mental health. This can impact her acceptance of equipment and participation in classroom tasks.
- **Interpersonal Skills:** The effects of cyberbullying have negatively impacted Charlotte's interpersonal skills, which influences her ability to interact with her peers and participate in group work.
- **Structure of Lesson:** There are no breaks between the lessons in Miss Honey's class outside of allocated morning tea and lunch breaks. This means that Charlotte may experience discomfort due to a lack of regular movement.

Question 6:

Changes you can implement to address the ergonomic factors affecting Charlotte's performance and participation:

- **Educate Teacher:** Educate Miss Honey about ergonomics and guide her towards resources she can use to obtain further information.
- **Educate Charlotte:** Inform Charlotte that her headaches may be caused by the glare from her laptop, and educate her on how to address this issue. This can be done by teaching her how to adjust the brightness and contrast settings on her laptop, and reiterating the importance of taking regular breaks from looking at the screen.
- **Provide Education to Charlotte's Classmates:** Educate the class on the importance of assistive technology to create a supportive classroom culture.
- **Classroom Layout:** Adjust the seating plan of the classroom to reduce the glare on Charlotte's laptop, and seat her with well natured peers to improve her interpersonal skills.
- **BYOD Policy:** Ensure that the BYOD policy includes provisions against cyberbullying or any form of disrespectful behaviour towards others, with detail on the consequences for violating the acceptable use guidelines, and procedures for reporting incidents of misconduct.
- **Adapt the Environment:** Make changes to the classroom such as dimming lights, providing Charlotte with an anti-glare screen protector, and installing curtains/blinds to

remove glare or moving her desk to be in a different area of the classroom where there is less glare.

- Adapt Lesson Plans: Integrate group work into lessons to encourage the development of Charlotte's interpersonal skills. If a learning task is able to be completed without BYOD devices, adjust the lesson plan to not use devices which will reduce Charlotte's exposure to glare.
- Schedule Breaks: Ensure that Charlotte and her classmates are taking regular eye breaks from device screens by setting timers and/or reminders.

Question 7:

Ergonomic factors that may be affecting Oscar's performance and participation:

- Compliance: Oscar finds it difficult to comply with Miss Honey's instructions and directions which impacts his ability to learn and actively participate in class.
- Limited Breaks: There are no breaks between lessons in Miss Honey's class outside of allocated morning tea and lunch breaks. This means that Oscar may have the urge to run around the classroom.
- Teacher Knowledge: Miss Honey has limited knowledge regarding ergonomic practices and is therefore unable to recognise poor ergonomic behaviours, provide suitable education to influence her students' behaviours, and make adjustments when required.
- Cognitive Capacity: Oscar experiences mental fatigue more easily than his peers when completing classroom tasks. This means he requires extra assistance from Miss Honey to stay engaged in activities.
- Temperature: As Oscar is seated directly in front of the air conditioning unit, he is cold which impacts his ability to concentrate and complete his classroom tasks.
- Furniture: Oscar's anthropometrics are well suited to the classroom furniture which reduces his discomfort and enhances his ergonomics.
- Workstation Layout: Oscar ensures his desk remains clear of clutter which prevents over-reaching for items.

Question 8:

Changes you can implement to address the ergonomic factors affecting Oscar's performance and participation:

- Educate Teacher: Educate Miss Honey about ergonomics and guide her towards resources she can use to obtain further information.
- Educate Oscar: Educate Oscar that when he is feeling cold, it will become difficult for him to concentrate on his learning tasks and provide him with strategies he can manage the issue. For example, encourage Oscar to bring a jumper to school and wear it when he is feeling cold.
- Classroom Layout: Reposition the seating layout to ensure Oscar's desk is away from the air conditioning unit to minimise environmental disruptions and enhance his comfort and concentration during classes. Additionally, placing Oscar next to a model student will provide him with positive peer influence and subtly encourage him to stay on task.
- Adapt Sensory Environment: Adjust the classroom temperature to ensure that Oscar is comfortable and able to perform to the best of his ability.

- Implement Movement Breaks: With Oscar becoming distracted and experiencing mental fatigue easily, it would be beneficial to implement regular whole class or individual movement breaks throughout lessons. This will assist Oscar in staying focused during learning tasks.
- Match Tasks with Cognitive Capacity: To create a positive learning environment, ensure that the classroom learning tasks are challenging yet achievable for Oscar. Additionally, provide Oscar with support and encouragement during difficult tasks to accommodate his learning needs and promote engagement.

Question 9:

To incorporate movement into the classroom lessons:

- Assign students tasks/jobs in the classroom (e.g., passing out and collecting papers)
- Utilise stations and rotational activities around the classroom
- Incorporate brain breaks
- Get students to act out concepts (e.g., characters from stories)
- Encourage standing activities
- Include transition activities (e.g., star jumps or hopping before beginning a new task)

Question 10:

To increase willingness to implement ergonomic recommendations:

- Gain an understanding of key stakeholders
- Provide education and highlight the benefits
- Collaborate on setting goals
- Offer professional development / training opportunities
- Provide support to make the implementation of recommendations as simple as possible
- Share success stories
- Engage with principals and higher-ups
- Monitor interventions and implement feedback into future recommendations