1 A comparison of attitudes towards remote learning during the COVID-19 pandemic between

2 students attending a Chinese and an Australian campus

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15 *Running head*: Attitudes to remote learning across countries

1

16 **Abstract**

17 The COVID-19 pandemic has been a strong driver for moving more teaching and learning

18 activities online. Border restrictions have had a severe impact on international students either

19 hoping to enrol in courses offered in Australia or continue with such courses if they are

20 already enrolled. The online learning experience is likely different between students onshore

21 and offshore. This study took a unique opportunity to investigate any such differences in

22 students' attitudes towards remote learning, necessitated by the pandemic, by comparing two

23 cohorts of students, Australia- vs. China-based. An anonymous survey using the Likert Scale

24 and open-ended questions was available for student feedback on subject delivery. The

25 students based in Australia expressed a preference for remote learning due to the convenience

26 of attendance and availability of the video recordings. However, students in China had a

27 strong preference for face-to-face sessions, with the lack of prior experience in an English-

28 speaking learning environment and hesitance to speak with the lecturers and engage in the

29 learning activities possible reasons for this. In quizzes, students in Australia performed better

30 than those in China regardless of local or international student status. This difference may be

31 due to the Australian-based students' prior experience of English-speaking environments and

32 open-book quizzes. In conclusion, remote learning in a familiar language and learning

33 environment is accepted by students, whereas if the teaching is delivered in a second

34 language using unfamiliar teaching methods, remote learning will require additional

35 scaffolding to enhance their learning experience.

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37 **Introduction**

38 Online learning is heralded as providing flexibility, increasing access, and reducing time lost

39 commuting to and from campus (1-3). However, some experts have raised significant

40 pedagogical concerns regarding the effectiveness of content delivery, the quality of teacher-

41 student interactions and the capacity for collaborative learning (4-8). Additionally, it is well

42 established in the literature that online learning requires strong self-regulation skills for

43 students to succeed (9, 10), and it is strongly linked to student motivation (11, 12). Before

44 COVID-19, the provision of exclusively online delivery was available through MOOCs and

45 virtual campuses such as Open University, allowing students to undertake a degree without

46 any on-campus learning experiences. Online learning has been considered a strategy for

47 higher education institutions to save costs and generate more income by increasing enrolment

48 beyond geographical proximity. However, there are additional costs in relying upon online

49 delivery, which need to be considered as well (13-19). The main idea behind online learning

50 is to allow educators to have a student-centred approach, a mixture of educational strategies,

51 learning experiences, instructional methods, and a support plan designed to address students

52 distinct learning needs, interests, aspirations, and cultural backgrounds (20). This approach is

53 harder to achieve purely with face-to-face teaching.

54 With the COVID-19 pandemic, and the requisite lockdowns, educational institutions have

55 relied upon fully online delivery. When there has been the relaxation of travel and assembly

56 restrictions, some measures remain, e.g. reductions in the maximum number of people within

57 the lecture theatres and practical laboratories to enable physical distancing. Thus, there has

58 been the implementation of a blend of on-campus and online activities where the choice of

59 mode of delivery for any teaching event would ideally align with best practices and linked

60 learning objectives (21-25). Online platforms like Zoom and Microsoft Teams support

61 interactions between lecturers and students. Any live sessions can be recorded automatically

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62 and shared with students inside the Learning Management System (LMS) for students who

63 missed the class and for revision purposes (20). Lecture recordings have been a feature of

64 higher education for over a decade but generally required special AV equipment installed in

65 every lecture theatre (26). Using webinar software has simplified this process. Despite

66 recorded lectures remaining a concern for educators as to their impact upon student

67 attendance, permanent replacement of on-campus delivery of particular teacher-led activities

68 with delivery online is now being considered (27-31).

69 Learning is a social interaction. There is strong evidence of the capacity of non-visual or non-

70 verbal cues that characterise face-to-face events to facilitate such interaction (32-36). Further,

71 when it comes to face-to-face classes, there are still national differences in the requirements,

72 teaching methods, and how these relate to students' perceptions of and engagement with this

73 type of class. In most Australian campuses, attendance has not been compulsory for lectures,

74 regardless of the availability of the recordings (37-39). However, attendance is commonly

75 recorded in Chinese universities, even in the online delivery setting during the pandemic, and

76 counts towards the final grade. Also, face-to-face delivery remains heavily favoured by

77 Chinese university students (40-43). Students in Australia are believed to be more likely to

78 ask questions or challenge the concept with the lecturers during the class, whereas those in

79 China are considered more likely to receive the information without any questioning

80 passively. The difference in approach to learning may be partly due to national differences in

81 the acknowledgement of the authority of the teachers. Notably, one of the Hofstede Model of

82 Cultural Differences dimensions is "Power Distance". This dimension allows for comparisons

83 between societies as to how hierarchal they are. When making the comparison between China

84 and Australia (https://www.hofstede-insights.com/product/compare-countries/), the Power

85 Distance Indices are 80 vs. 38, respectively (44). Different teaching methods may also

86 contribute to such differences. To encourage critical thinking interaction between the students

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87 and teachers and lifelong learning skill development, campuses in Australia have been

88 promoting online self-directed learning and flipped learning methods for several years before

89 COVID. Campuses in China commonly still employ the traditional didactic style, which may

90 be why attending students are still positioning themselves as knowledge receivers (12, 45-

91 49). The contrast between face-to-face classes with the everyday experiences of online

92 delivery remains stark. In online lecturing, the teacher remaining seated in front of their

93 camera, students opting out (albeit in some cases for legitimate reasons) of using their camera

94 and current setups restricting the number of participants visible at any moment; are all likely

95 to have an impact upon the quality of interaction. Although some features of webinar

96 software, such as creating breakout rooms, can promote student interaction and collaboration

97 when the learning design is well executed (50-52).

98 COVID-19 related border restrictions have had a severe impact on international students

99 coming to Australia. While vaccination is becoming more widespread, any sort of return to

100 pre-pandemic international student numbers will likely be some time away. Online delivery

101 to offshore students is also something that preceded the pandemic but appears to be gaining

102 more traction now (52-55). Notably, offshore online delivery can be part of a student equity

103 strategy in offering an alternative to overseas students for whom the social and financial costs

104 of studying overseas remain an obstacle. This approach must be underpinned by

105 understanding differences between different national cohorts and remote learning.

106 At a large metropolitan Australian university in Sydney, Human Pathophysiology is delivered

107 as a core unit (referred to as a "subject" at the Australian campus) to the medical science

108 students in their second year and as an elective to students with any other majors who have

109 completed the pre-requisite unit on human anatomy and physiology. In 2020 Human

110 Pathophysiology was delivered entirely online for the first time. The university has a four-

111 year undergraduate pathway program with a campus in the People's Republic of China

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112 (PRC). The fourth year provides students with the opportunity to study abroad. In this

113 program, lecturers from the Australian campus deliver several units to the China-based

114 students enrolled in the third year of this pathway program. Due to border closures, the

115 Australian campus replaced the planned face-to-face delivery with online delivery via Zoom.

116 In combination, these changes gave the investigators a unique opportunity to compare remote

117 learning attitudes between students enrolled at the Australian campus and those attending the

118 campus in the PRC. The main challenges may include language barriers (e.g. English as an

119 Additional Language and the absence of an English-speaking living environment) and

120 differences in prior learning experience between the two cohorts. In Australia, universities

121 aspire to follow a student-centred approach characterised by practice-oriented, collaborative

122 learning focusing on critical thinking and engagement in authentic learning (47, 48, 56). In

123 contrast, science education in China is more traditional, commonly utilising didactic methods,

124 with only gradual employment of student-centred approaches (40-43).

125 This research paper investigates student attitudes towards remote learning during the

126 pandemic by comparing two cohorts of students, Australia- vs. China-based. The

127 investigators formulated two research questions: (i) What is the overall student attitude

128 towards remote learning during the pandemic? (ii) Are there any differences between the two

129 cohorts in their respective attitudes towards remote learning?

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131 **Research methods**

132 This study was approved by the University's Human Ethics Research Committee (#ETH20-

133 5469). One cohort under study were students, from a mixture of majors (including Medical

134 Science, Biomedical Science, Biotechnology, Biomedical Physics, Nursing, Traditional

135 Chinese Medicine, Engineering), enrolled in the unit Human Pathophysiology, taught at the

136 Faculty of Science at a metropolitan university in Sydney, Australia. The other cohort were

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137   students enrolled in the pathway program mentioned above (Biotechnology major) at a public

138   university in a Northern province of the PRC. Both cohorts studied the same unit during the

139   same time (during Spring Session (August to November) 2020) delivered by the same group

140   of teaching staff. Given the time of the year when the unit ran, all students had previously

141   experienced at least one online teaching session. Students at the Australian university were a

142   mix of domestic and international students generally halfway through their respective courses

143   at the Australian campus. The details of any international students' specific nationalities were

144   not available. The researchers used a mixed-method approach (57), which combines

145   qualitative and quantitative data to answer the research questions. They used methodological

146   triangulation of data to increase the credibility of findings (58). Data collection included

147   demographics, a survey using the Likert Scale (Table 1) and open-ended questions, final

148   marks for the unit and student feedback on its delivery.

149   Unit structure

150   Zoom^{TM} is the webinar platform used at the Australian campus for online teaching. The two-

151   hour-long lectures were delivered weekly either as a live Zoom session, or a pre-recording,

152   with the latter supported by a live Q&A Zoom session during the designated live lecture time

153   slot. The Q&A sessions were recorded. Due to the exclusively online learning delivery for

154   both cohorts, all the laboratory-based practical sessions were replaced by online Zoom

155   tutorials (but timetabled as "workshops" and running for two hours/week). These tutorials

156   incorporated videos demonstrating relevant skills performed by the teaching staff and case

157   studies which allowed students to apply their theoretical knowledge in a clinical context. The

158   case studies required the students to identify characteristic symptoms in a patient, form an

159   initial diagnosis, order the relevant laboratory examinations (e.g. total blood counts,

160   computed tomography scans), and choose the most appropriate treatment. Some case studies

161   included short videos demonstrating patient consultation procedures filmed in a simulation

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162 facility that incorporated a hospital ward and consultation rooms (59). The students were

163 required to analyse the case in Zoom breakout rooms and form their own answers, facilitated

164 by the tutor. All Zoom sessions and tutorial recordings were made available to all students

165 immediately after the class on the LMS. While students onshore followed a timetable

166 organised by the student administration unit of the Australian university, the Chinese students

167 were assigned session times that were not part of the formal timetable of their campus.

168 The assessments were open-book quizzes (60% of the final mark) and a group-created

169 assignment (40% of the final mark). The quizzes used higher-order multiple-choice questions

170 that examined the ability of the students to apply their knowledge to authentic scenarios.

171 Only the top three quiz results contributed to the determination of the final grade. As these

172 were open book exams, there was no restriction on materials that could be brought into the

173 exam. The only difference between the cohorts was that due to access issues for the China

174 campus students, while the Australian cohort undertook the quizzes online, the Chinese

175 students used hard copies. The group assignment required each group to prepare a

176 presentation to introduce or promote a health concept (not restricted to teaching content) to

177 audiences with no scientific background. Students were required to research information not

178 covered by the unit teaching content.

179 <u>Study Design</u>

180 Although delivering teaching using Zoom is not a new technology, there is a lack of validated

181 surveys to gauge student attitudes towards the webinar style of teaching. Conceivably this is

182 due to the limited use of the platform in higher education prior to the COVID-19 pandemic.

183 Instead, the investigators designed a survey. Completing the anonymous survey was

184 voluntary, and no demographic details were collected (Table 1). Students were not surveyed

185 regarding nationality or study major to avoid any concerns from the participants of potential

186 cross-referencing of their identity.

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188 Table 1. Survey items. In the survey, "exams" refers to online quizzes.

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191   The intention was to validate the survey using Exploratory and Confirmatory Factor

192   Analysis, although the sample size did not allow the researchers to run the statistical

193   validation.

194   The students were asked to rank each statement on a four-point Likert scale (Strongly

195   Disagree, Disagree, Agree, and Strongly Agree). The items addressed whether students prefer

196   participating in a live activity or watching the recording of activity and whether the online

197   format provided sufficient learning material and a balanced learning experience in terms of

198   theory and its application. The survey included open-ended questions (1. *What would you like*

199   *to be changed or modified in this subject if you were to be a tutor for this course?* 2. *Any*

200   *suggestions for improvement in the near future?*) that allowed students to give feedback on

201   their interactions among their peers during tutorials and group assignments, any need for

202   face-to-face learning activities, and suggestions for future refining of the delivery of the

203   learning resources. The answers to the open-ended questions were subjected to thematic

204   analysis.

205   The survey for the Australia cohort was delivered using the learning platform Canvas[TM] and

206   available from the last week of the session for two weeks. Due to the technical limitations of

207   their university's LMS, the same survey was provided as a hard copy to the students at the

208   Chinese campus during the last of the weekly meetings of the session. Each question had the

209   text translated into Chinese script directly below to avoid misinterpretation. Of 371 students

210   enrolled at the Australian campus, 62 students completed the online survey (17%

211   participation). All students enrolled at the Chinese campus completed the survey in the case

212   of students enrolled at the Chinese campus. A lower response rate for the Australian students

213   using an online platform was expected (60). That 17% of the total Australian campus students

214   responded was in line with the historical data on responses provided by the same

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215   administrative unit. The much higher response for Chinese students using a hard copy is

216   consistent with previous hard copy survey that we have administered with students at the

217   Australian campus (59, 61).

218   The University's Student Administration Unit provided the demographic information of the

219   Australian cohort.

220   <u>Data analysis</u>

221   Each survey response was tallied to determine the extent to which the surveyed students

222   agreed or disagreed with each statement. This number was converted into a percentage of the

223   total number of students who submitted the survey. The final mark distributions for domestic

224   and international students were obtained from the University's Student Administration Unit.

225   The same unit also indicated which students disclosed whether English was their first

226   language when enrolled on the Australian campus. The same lecturers marked the

227   assessments submitted by both cohorts.

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229 **Results**

230 <u>Demographics</u>

231 For the Australian campus, 368 students were enrolled in the 2020 Spring Session, of which

232 13.5% were international students. As stated previously, neither chosen major, demographic

233 information, nor enrolment status was collected. Most international students identified

234 English as an Additional Language (EAL) (58%). Most of the students were older than 20

235 years old (83%), and 65% of the whole class were female. The Chinese campus cohort

236 (N=40) were all in their early twenties, 36 were female, and all were native Chinese speakers.

237 Twenty-five of them had English language competency equivalent to or above IELTS

238 (https://www.ielts.org) score of 6.5 (62.5%), the minimum entry requirement for Australian

239 universities. The rest of the students did not attend the Academic English unit offered by the

240 Faculty of Science of the Australian campus but attended a 500-hour long college-level

241 English course provided by the Chinese campus for the two years prior to enrolment in

242 Human Pathophysiology. Although there was no available evaluation of their English

243 competence, all the Chinese students undertook and passed four units delivered partially in

244 English in previous semesters by the teaching staff of their host university. The Chinese

245 teaching staff previously received teaching training at the Australian University where the

246 investigators conducted this study.

247 <u>Attitude towards the remote learning format</u>

248 Regarding lectures, over half of the Australian and Chinese cohorts agreed or strongly agreed

249 to the statement, *"I prefer to watch a pre-recorded lecture and attend a live zoom Q&A*

250 *session"* (Figure 1a, b). Over 75% of students at the Australia campus also agreed or strongly

251 agreed with the statement, "*I prefer to watch a recording of the live zoom lecture*" (Figure

252 1c). However, nearly 60% of the students at the Chinese campus disagreed or strongly

253 disagreed with the same statement (Figure 1c). Several students at the Chinese campus

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254   commented that there was little time to view the recordings when such activity was not

255   timetabled.

256   More than half of the students at the Australian campus agreed or strongly agreed with the

257   statements, "*I prefer to attend a live workshop/tutorial*" and "*I prefer to watch a recording of*

258   *the live workshop/tutorial*" (Figure 2a, b). They enjoyed the interactions with the tutors

259   during the live tutorial (which the students referred to as "workshops" as per their timetable)

260   and used the recording for revision purposes or when they missed a session. Some

261   commented, "*I thoroughly enjoyed the workshops*" "*workshops recorded. I was unable to*

262   *attend one of the workshops and would love to be able to re-watch some to write more notes*

263   *on the content covered.*" "*lectures and workshops recorded so that we are able to replay and*

264   *re-watch content at our own convenience*". In contrast, more than half of the same cohort did

265   not want to attend a face-to-face tutorial class (Figure 2c). However, in the open-ended

266   questions, several students still wanted the face-to-face class to perform the practical

267   activities (e.g. taking blood pressure, measuring lung function, performing urinalysis), in

268   addition to watching the videos demonstrating these skills. In addition, in the open-ended

269   questions, students also raised concerns over fewer interactions among their peers online

270   when compared with face-to-face sessions. One stated that "*I do prefer face-to-face learning*

271   *as online workshops for two hours can be a bit disengaging*". While another student wrote

272   that "*12 people in there [i.e. the breakout room] only 2 would actually talk*". One student

273   suggested, "*make cameras be turned on to encourage and 'force' interaction*".

274   In contrast, although the students at the Chinese campus also showed preferences for both a

275   live Zoom tutorial (Figure 2a) and the availability of the recordings (Figure 2b), more than

276   80% of them also agreed or strongly agreed with the statement, "*I prefer to attend a live face-*

277   *to-face workshop/tutorial*" (Figure 2c). These students did mention issues with internet

278   quality that affected their learning quality, notably the Chinese campus does not provide

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279   broadband access to the students. Surprisingly, they were willing to watch the tutorial

280   recordings rather than the lectures. This willingness may be due to the greater amount of

281   content delivered in the latter.

282   When it came to collaborative learning for a group assignment, there were no clear

283   preferences for either face-to-face or online meetings for the students at the Australian

284   campus (Figure 3). While those at the Chinese campus most strongly preferred face-to-face or

285   a mix of both (Figure 3). In the open-ended questions, students at the Australian campus

286   suggested using various methods to communicate with their peers, including Zoom,

287   Microsoft Teams^{TM}, WhatsApp^{TM} and Facebook^{TM}. However, some students noted that there

288   could be delays in receiving information from group members and missing chat posts.

289   Subject information was also delivered to the China campus-based students via the popular

290   Chinese social media app WeChat^{TM}, which they considered efficient (61.5% agree, 30.8%

291   strongly agree). Therefore, while both student cohorts preferred a mixture of online and face-

292   to-face meetings to prepare their group assignments, there was a clear preference for face-to-

293   face amongst the Chinese campus students.

294   <u>Student feedback on the unit delivery</u>

295   Albeit delivered purely online, the majority of students at both universities agreed that there

296   was a good balance between the theoretical and practical teaching (i.e. lectures vs. case

297   studies and skill demonstrations) (Figure 4a), and more than 80% of the students considered

298   the unit (the students understand these to be "subjects") well organised (Figure 4b). Answers

299   to open-ended questions reinforced this: "*This semester adopted the online teaching, but I*

300   *still gained a lot of knowledge of human pathophysiology*" "*I liked how everything in the*

301   *subject was related (lec[ture], tutorial, assessment), allowing for effective learning*". "*This*

302   *subject has adapted quickly and effectively to the change to online learning, and it has*

303   *proven successful.*" "*The presentation is a good idea as it allowed students to use teamwork*

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304 *and creative skills and apply that to an assignment which was very enjoyable*. "*It was a [sic]*

305 *unique assessment that made online learning great*." Interestingly, 87% of students at the

306 Australian campus were satisfied with the remote learning, while only half of the Chinese

307 campus students felt the same way (Figure 5a). In the open-ended question, two Chinese

308 students expressed the need for the lecturers to slow down in their speech. Six Chinese

309 students asked for a reduction in the teaching content, as there was too much to memorise.

310 Nine Chinese students asked for more videos, images, and additional materials to help them

311 understand the content, and one specifically asked for equivalent Chinese materials.

312 Quiz marks

313 Eighty-five per cent of students from the Australian cohort were satisfied with their quiz

314 marks which were known at the time of the survey (Figure 5b). According to the data

315 analysed, there was a difference in the grade distribution between domestic and international

316 students. For the enrolled domestic students, the grades were skewed towards Distinction and

317 High Distinctions (Figure 5c), while the grades were more evenly distributed among Credits,

318 Distinction, and High Distinctions for the international students at the Australian campus

319 (Figure 5c). The failure rate was low among both cohorts (1.3% for Australian campus-

320 enrolled domestic students, 2% for international students in the Australian cohort, and 5% for

321 the Chinese campus-based cohort). Notably, amongst the Australian cohort, those who

322 identified themselves as EAL speakers were less represented among the High Distinction

323 (HD) students than those self-identified as native English speakers. However, both groups at

324 the Australian campus still outperformed their Chinese campus-based colleagues (Figure 5c).

325 While receiving similar percentages of Distinctions or High Distinctions as the Australian

326 campus cohort, only about a third of the China-based students were happy with their marks

327 (Figure 5b). Most of these students' grades were in the range of Pass and Credit (Figure 5c).

328 Six students at the Chinese campus expressed the need to increase the quiz time by 25% as

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329   they experienced difficulties completing all questions during the allocated time. Reading

330   speed and the need to check words in the dictionary were the reasons for difficulty with

331   completion. The time allocated to complete the quiz did not arise as an issue for the students

332   enrolled at the Australian campus.

333   **Discussion**

334   The COVID-19 epidemic has been catastrophic, claiming many lives and affecting the

335   economy of all nations and the well-being of individuals, including students. Among all the

336   changes wrought by the pandemic, remote working has become commonplace. Notably, a

337   significant number of people are indicating a preference for it, although this has not been

338   without issues such as extended work hours and the challenges of working in a domestic

339   environment (62-64). Students enrolled at the Australian campus echoed a similar preference

340   towards remote learning. One of the advantages of using Zoom meetings to deliver lectures

341   or tutorials is that they can be recorded easily and, potentially, with a high degree of fidelity.

342   This advantage may explain why most students in both countries agreed or strongly agreed

343   with both attending live streaming sessions and having the video recordings available.

344   However, there was a substantially higher rate of favourable responses to face-to-face

345   delivery sessions amongst students enrolled at the Chinese campus.

346   There are some similarities in the attitudes towards remote learning in tutorials among

347   students at the two universities. Most students at both campuses showed preferences for

348   remote live delivery of tutorials. The quality of any Zoom presentation can be influenced by

349   the quality of an individual's internet connection, the degree of student participation, and the

350   individual's proficiency in the language of instruction. For example, if not all the students

351   participate in a breakout room (whether due to technical or personal reasons), then discussion

352   and consideration of ideas will be sub-optimal. In a face-to-face session, participation can be

353   encouraged by eye contact, facial expression, and body language. This level of interaction is

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354 difficult online when a student does not always turn on the video due to shyness, privacy, or

355 bandwidth issues. Also, remote learning is commonly in isolation, an environment likely to

356 have more distractions than an on-campus classroom requiring students to harness strong

357 self-regulation skills such as environment structuring to avoid these distractions.

358 Where the cohorts did differ was in the preference for face-to-face classes. Less than half of

359 the students in the Australian cohort felt they needed these, whereas most students at the

360 Chinese campus would also want a face-to-face session in addition to an online collaborative

361 session. This difference was not a surprising response since the practice of face-to-face

362 teaching remains the norm at Chinese campuses (42). In addition, differences in accent can

363 also add a layer of difficulties when staff from the Australian university are themselves from

364 an EAL background (65-67).

365 Most students in the Australian cohort were satisfied with remote learning. This response

366 could be attributed to the nature of student-centred approaches in Australian universities and

367 that students do not need to commute to the campus. Additionally, the recording of lectures

368 and tutorials provides the flexibility of when and where to study (68). Routine recording of

369 lectures was not always available before COVID-19 due to differences in audio-visual

370 support and infrastructure between faculties and campuses. Previously at the Australian

371 campus, if students missed a lecture or tutorial, they often could only rely on printed and

372 printable resources, perhaps supplementing these with notes from their peers. At the Chinese

373 campus, all the units delivered by their own staff were face-to-face in a classroom, and

374 attendance remains compulsory in the absence of any legitimate reasons, e.g. illness. These

375 same students may have anticipated the same for units delivered by the Australian campus

376 staff rather than attending a Zoom session at a location of their choice. This failure to match

377 expectations may explain why less than half of Chinese students were satisfied with remote

378 learning, whereas 87% of students in the Australian cohort were satisfied with learning

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379   remotely.

380   The students of the 2020 cohort were examined remotely via open book online quizzes.

381   Interestingly overall, the students achieved higher marks when compared to a cohort that

382   studied the unit exclusively on campus with a supervised closed-book summative exam (61).

383   One reason may be less stress in the former, given that previous studies have demonstrated

384   that stress undermines learning and cognitive processes (69, 70). Students preparing for open-

385   book exams or quizzes may be required to utilise learning strategies based on higher-order

386   thinking rather than being structured around student recall of content (71, 72). Therefore, the

387   learning experience is more active and helps students understand and apply what they have

388   learnt (73).

389   The better performance of international students in the Australian cohort than those at the

390   Chinese campus could have been due to several reasons. The international students of the

391   Australian cohort had studied in an English-speaking environment for at least a year at the

392   time of enrolment in Human Pathophysiology. Albeit the grade distribution of students at the

393   Australian campus who self-identified as EAL suggests that English proficiency can still have

394   an impact upon their performance, their familiarity with academic English could still give

395   these students an academic advantage compared to students at the Chinese campus. Notably,

396   most students at the Chinese campus could not complete all questions within standard quiz

397   time and suggested they needed more time to complete them. Another consideration is the

398   type of assessment. Open-book exams or quizzes ideally focus more on applying knowledge

399   than recalling information. The students at the Australian campus undertook supervised open-

400   book exams and quizzes before Spring 2020. However, tests for in-house units at the Chinese

401   campus are still closed-book, which was likely to have an impact upon how these students

402   prepared for any quiz in Human Pathophysiology. Notably, seven students from the Chinese

403   campus asked for more practice questions for the quizzes or to be told what contents to

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404   examine from each lecture. These requests align with a common approach adopted by

405   students in China at all levels by practising how to answer exam questions instead of learning

406   how to apply the knowledge (76-78). The students in China likely prepared for closed-book

407   assessments without realising the quizzes for Human Pathophysiology were evaluating their

408   application, rather than recall, of content. This was despite the intention of the Human

409   Pathophysiology tutorials to encourage the application of knowledge, seeing the students

410   "skilled up" to utilise the same approach for the open-book quizzes. There has been a

411   discussion in the literature on transitioning from closed-book to open-book exams and

412   quizzes (74, 75). Students need time and scaffolding for this transition. Strategies include the

413   educator providing exemplars of questions to prepare the students. The Australian campus

414   students have had these resources since 2018, as well as a video on how to prepare for open-

415   book tests. These resources were embedded into the LMS and had more than 2,000 views in

416   previous years.

417   This study has several limitations. For instance, it has a gender imbalance, specifically for the

418   Chinese campus cohort where 90% were female (*c.f.* 65% in the Australian cohort). This

419   imbalance could have had an impact on the comparisons made in this study as the literature

420   has reported gender-related differences in the attitude towards using Information and

421   Communication Technology (ICT) according to gender (79-81). The experience of studying

422   Human Pathophysiology also differed between the two cohorts. Teaching was delivered

423   exclusively online for those attending the Australian campus, with the assumption that

424   streaming to a primarily urbanised and domestic cohort would be of good quality; whereas, at

425   the Chinese campus, the quality of the online delivery appeared to be sub-optimal due to

426   internet quality of the local providers (personal communication). Only 17% of the students in

427   the Australian cohort filled in the survey, so the responses may not reflect the attitude of the

428   whole class. However, this response rate was considered representative for this cohort. In the

19

429 absence of collecting demographic information from the participants, we were unable to

430 segment the responses of the Australian cohort based on their citizenship status. Such

431 information could be incorporated in future survey designs. Also, the study did not

432 incorporate follow-up interviews and focus groups that would have allowed the investigators

433 to investigate better the responses to the open-ended questions (57). Finally, the study

434 collected data in one session only. A longitudinal study could provide a more accurate view

435 of Chinese student attitudes towards remote learning, particularly after additional experiences

436 of student-centred approaches.

437 As a recommendation, using the Hofstede Model of Cultural Differences to frame future

438 research in the field will be ideal as it could identify cohort's characteristics and develop

439 strategies to achieve a culturally sensitive learning design and empower students to become

440 self-directed learners (44). This adoption could include utilising a scaffolding strategy for

441 offshore Chinese students to support their remote learning. This strategy will support the

442 transition to open-book exams and applying knowledge rather than just recalling it.

443 Discussions via online conferencing on strategies for preparing for open-book quizzes could

444 be helpful for Chinese students. Additionally, a welcome video to the unit in which teaching

445 staff highlight the expectations and point the students to support resources will be beneficial.

446 Such a video can be linked to a quiz about the teaching strategies in the unit to optimise

447 students "buy-in".

448 <u>Conclusion</u>

449 Students welcome remote learning in a familiar language and learning environment that is

450 student-centred. However, if the teaching is delivered in a second language using unfamiliar

451 teaching methods, remote learning will require scaffolding to enhance their learning

452 experience. This preliminary study opens the window to future research aiming to standardise

453 the delivery of the unit across different nationalities.

20

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458   **Disclosures**

459   No conflicts of interest, financial or otherwise, are declared by

460   the authors.

461   **Author contributions**

462   HC, DVR and JR designed the survey. HC and BGO implemented the investigation. HC and

463   DVR, and JR analysed the data. HC and DVR prepared the first draft. All authors have

464   approved the final submission.

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References

1.   **Alexander MW, Truell AD, and Zhao JJ**. Expected advantages and disadvantages of online learning: Perceptions from college students who have not taken online courses. *Issues Inform Sys* 13: 193-200, 2012.

2.   **Farrah M, and al-Bakry GH**. Online learning for EFL students in Palestinian universities during corona pandemic: Advantages, challenges and solutions. *Indo J Learn Instruct* 3: 2020.

3.   **Mukhtar K, Kainat J, Arooj M, and Sethi A**. Advantages, limitations and recommendations for online learning during COVID-19 pandemic era. *Pak J Med Sc Quart* 36: 2020.

4.   **Du J, Fan X, Xu J, Wang C, Sun L, and Liu F**. Predictors for students' self-efficacy in online collaborative group work. *Ed Tech Res Dev* 67: 767-791, 2019.

5.   **Dumford AD, and Miller AL**. Online learning in higher education: exploring advantages and disadvantages for engagement. *J Comp Higher Ed* 30: 452-465, 2018.

6.   **Gemmel PM, Goetz MK, James NM, Jesse KA, and Ratliff BJ**. Collaborative Learning in Chemistry: Impact of COVID-19. *J Chem Ed* 97: 2899, 2020.

7.   **Goei SL, van Joolingen WR, Goettsch F, Khaled A, Coenen T, In 't Veld SGJG, de Vries S, and Schipper TM**. Online lesson study: virtual teaming in a new normal. *Int J Lesson Learn Stud* 10: 217-229, 2021.

8.   **Welser HT, Khan ML, and Dickard M**. Digital remediation: social support and online learning communities can help offset rural digital inequality. *Inform Comm Soc* 22: 717-723, 2019.

9.   **Barnard L, Lan WY, To YM, Paton VO, and Lai S-L**. Measuring self-regulation in online and blended learning environments. *Internet Higher Ed* 12: 1-6, 2009.

10.   **Barnard-Brak L, Paton VO, and Lan WY**. Profiles in self-regulated learning in the online learning environment. *Int Rev Res Open Distributed Learn* 11: 61-80, 2010.

11.   **Artino Jr AR, and Stephens JM**. Academic motivation and self-regulation: a comparative analysis of undergraduate and graduate students learning online. *Internet Higher Ed* 12: 146-151, 2009.

12.   **Zhu Y, Zhang JH, Au W, and Yates G**. University students' online learning attitudes and continuous intention to undertake online courses: a self-regulated learning perspective. *Ed Tech Res Dev* 68: 1485-1519, 2020.

13.   **Bradshaw D**. Blended approach extends reach. In: *Financial Times*. London, UK: 2011, p. 1.

14.   **Brinner R**. Weak enrollment will cripple higher education revenue at the same time that government budget crises may slash support; online learning strategies offer a critical solution: Address to university presidents outlines economy's near-term impact, potential for online learning opportunities to expand access, reduce cost and improve quality. In: *PR Newswire*. New York, NY, USA: 2012.

15.   **Cusumano MA**. Technology strategy and management: are the costs of 'free' too high in online education? *Comms of the ACM* 56: 26, 2013.

16.   **Deming D**. Online learning should return to a supporting role: economic view. In: *New York Times (Online)*. New York, NY, USA: 2020.

17.   **Deming DJ, Goldin C, Katz LF, and Yuchtman N**. Can online learning bend the higher education cost curve? *Am Econ Rev* 105: 496-501, 2015.

18.   **Illing D**. Institutions, business cast net together. In: *The Australian*. Canberra, ACT, Australia: 2002, p. 32.

19.   **Thomas R**. Move to cheaper online learning angers nurses. In: *Dominion Post*. Wellington, NZ: 2018.

22

515 20.   **Reyna J**. The benefit of online learning for your teaching practices. *Eye2Eye* 23: 41,
516   2020.
517 21.   **Humphrey EA, and Wiles JR**. Lessons learned through listening to biology students
518   during a transition to online learning in the wake of the COVID-19 pandemic. *Ecol Evol* 11:
519   3450-3458, 2021.
520 22.   **Ngoc Thuy Thi T, De Wever B, and Valcke M**. Face-to-face, blended, flipped, or
521   online learning environment? Impact on learning performance and student cognition. *J Comp*
522   *Assist Learn* 36: 397-411, 2020.
523 23.   **Nordmann E, Horlin C, Hutchison J, Murray J-A, Robson L, Seery MK, and**
524   **MacKay JRD**. Ten simple rules for supporting a temporary online pivot in higher education.
525   *PloS Comp Biol* 16: 2020.
526 24.   **Pilkington LI, and Hanif M**. An account of strategies and innovations for teaching
527   chemistry during the COVID-19 pandemic. *Biochem Mol Biol Ed* 49: 320-322, 2021.
528 25.   **Sinacori B, and Williams-Gregory M**. The effect of distance learning on knowledge
529   acquisition in undergraduate second-degree nursing students: a systematic review. *Nurs Ed*
530   *Persp* 42: 136-141, 2021.
531 26.   **Reyna J**. Exploring a framework to design desktop recording lectures (DRLs). In:
532   *EdMedia+ Innovate Learning* Association for the Advancement of Computing in Education
533   (AACE), 2015, p. 1302-1311.
534 27.   **Benito Á, Dogan Yenisey K, Khanna K, Masis MF, Monge RM, Tugtan MA, Vega**
535   **Araya LD, and Vig R**. Changes that should remain in Higher Education post COVID-19: a
536   mixed-methods analysis of the experiences at three universities. *High Learn Res Comm* 11: 4,
537   2021.
538 28.   **Lockee BB**. Online education in the post-COVID era. *Nature Elec* 4: 5-6, 2021.
539 29.   **Morris J**. Hybrid Learning in a Post-COVID Future. In: *University Wire*. Carlsbad, IL,
540   USA: 2021.
541 30.   **Nair A**. Post-lockdown, city uni's plan major shift in academic structure. In: *The Times*
542   *of India (Online)*. New Delhi, India: 2020.
543 31.   **Ohm R**. Unity College launches new environmental education effort. The program
544   comes eight months after the college transitioned to a permanent hybrid-learning model. In:
545   *Portland Press Herald*. Portland, OR, USA: 2021.
546 32.   **Hao J, and Hood S**. Valuing science: The role of language and body language in a
547   health science lecture. *J Pragmatics* 139: 200, 2019.
548 33.   **Hood S**. Live lectures: The significance of presence in building disciplinary
549   knowledge. *Onomázein* 179-208, 2017.
550 34.   **Lawson R, and Martins MSC**. NATV 3130: Optimising Traditional Learning
551   Approaches in an International Blended Learning Course. *Int J Inform Ed Tech* 2: 600-602,
552   2012.
553 35.   **Sueyoshi A, and Hardison DM**. The role of gestures and facial cues in second
554   language listening comprehension. *Lang Learn* 55: 661-699, 2005.
555 36.   **Urban B, Zaletelj J, and Košir A**. Video-based learners' observed attention estimates
556   for lecture learning gain evaluation. *Multimed Tools App* 77: 16903-16926, 2018.
557 37.   **Dickson KA, and Bruce Warren S**. Standing room only: faculty intervention
558   increases voluntary lecture attendance and performance for disadvantaged year 1 Bioscience
559   students. *Higher Ed Pedagogies* 1: 2016.
560 38.   **Dolnicar S, Kaiser S, Matus K, and Vialle W**. Can Australian Universities Take
561   Measures to Increase the Lecture Attendance of Marketing Students? *J Marketing Ed* 31:
562   203, 2009.
563 39.   **Van Onselen P**. Up-end attendance rules for tutorials and lectures. In: *The Australian*.
564   Canberra, ACT, Australia: 2011, p. 22.

23

565   40.   **Cheng X, Chan LK, Li H, and Yang X**. Histology and embryology education in
566   China: the current situation and changes over the past 20 years. *Anat Sc Ed* 13: 759-768,
567   2020.
568   41.   **Chenxi Z, Shue Z, Jin Z, Qinglin L, Jing T, Liyan Z, and Depin C**. Enlightenment
569   of American medical education system reform on undergraduate clinical medical education in
570   China. *Chin J Med Ed* 41: 381, 2021.
571   42.   **McConnell D**. E-learning in Chinese higher education: the view from inside. *Higher*
572   *Ed* 75: 1031-1045, 2018.
573   43.   **Wu H, Xie A, and Wang W**. Eight-year medical education program: retrospect and
574   prospect of the high-level medical talent training in China. *ECNU Rev Ed* 4: 190-209, 2021.
575   44.   **Hofstede G**. Dimensionalizing cultures: The Hofstede model in context. *Online*
576   *Readings Psychol Culture* 2: 2011.
577   45.   **Beswick DG, and Rao GL**. Cultural Differences and Similarities in Academic
578   Motivation: A Comparison of Indian and Australian Student Attitudes. *Aust J Ed* 20: 184-
579   201, 1976.
580   46.   **Chuah S-H**. Teaching East-Asian students: some observations *The Economics*
581   *Network*. https://www.economicsnetwork.ac.uk/showcase/chuah_international. [21/11/2021,
582   2021].
583   47.   **Gokhale A, and Machina K**. Guided online group discussion enhances student critical
584   thinking skills. *Int J E-Learn* 17: 157-173, 2018.
585   48.   **Osborne DM, Byrne JH, Massey DL, and Johnston ANB**. Use of online
586   asynchronous discussion boards to engage students, enhance critical thinking, and foster
587   staff-student/student-student collaboration: A mixed method study. *Nurse Ed Today* 70: 40,
588   2018.
589   49.   **Wang IK-H**. Long-term Chinese students' transitional experiences in UK Higher
590   Education: A particular focus on their academic adjustment. *Int J Teach Learn Higher Ed* 30:
591   12-25, 2018.
592   50.   **Beriswill J**. Zoom redefines web conferencing for education. In: *E-Learn: World*
593   *Conference on E-Learning in Corporate, Government, Healthcare, and Higher Education*
594   Association for the Advancement of Computing in Education (AACE), 2018, p. 1208-1211.
595   51.   **Chandler K**. Using breakout rooms in synchronous online tutorials. *J Persp App Acad*
596   *Prac* 4: 16-23, 2016.
597   52.   **Premji ZA**. Managing small group activities in multiple breakout rooms as a solo
598   instructor. *Acad Bus Lib Rev* 5: 2021.
599   53.   **Bothwell E**. Would-be international students 'prefer to study in-person at home'. In:
600   *Times Higher Education*. London, UK: THE World Universities Insights Limited, 2020.
601   54.   **Wilczewski M, Gorbaniuk O, and Giuri P**. The psychological and academic effects
602   of studying from the home and host country during the COVID-19 pandemic. *Front Psychol*
603   12: 644096, 2021.
604   55.   **Wolf T, Hollot CV, Tessier R, Polivka B, Hoehn-Saric C, Kang JD, and Newman**
605   **K**. Synchronous cohort-based international education. In: *Association for Engineering*
606   *Education-Engineering Library Division Papers*. Atlanta: American Society for Engineering
607   Education-ASEE, 2019.
608   56.   **Pereira JV-B, Vassil JC, and Thompson RE**. Students as partners in an Australian
609   medical program: Impact on student partners and teachers. *Int J Students Partners* 4: 110-
610   121, 2020.
611   57.   **Tashallori AM, and Teddlie CB**. *Sage Handbook of Mixed Methods in Social &*
612   *Behavioural Research*. Thousand Oaks, CA, USA: Sage Publishing Inc., 2010.
613   58.   **Bekhet AK, and Zauszniewski JA**. Methodological triangulation: an approach to
614   understanding data. *Nurs Res* 20: 40-43, 2012.

24

615 59. **Chen H, Power T, Hayes C, Reyna J, and van Reyk D**. Perceptions of video
616 scenarios to learn human pathophysiology among undergraduate science students. *J Sc Ed*
617 *Tech* 29: 597-604, 2020.
618 60. **Dommeyer CJ, Baum P, Hanna RW, and Chapman KS**. Gathering faculty teaching
619 evaluations by in-class and online surveys: Their effects on response rates and evaluations.
620 *Assess Eval Higher Ed* 29: 611-623, 2004.
621 61. **Chen H, Kelly M, Hayes C, van Reyk D, and Herok G**. The use of simulation as a
622 novel experiential learning module in undergraduate science pathophysiology education. *Adv*
623 *Physiol Ed* 40: 335-341, 2016.
624 62. **Laurent L**. Working from home in a pandemic is not shirking it. *Nat Real Estate Invest*
625 2020.
626 63. **Steele A**. Survey of those working from home due to COVID-19 reveals new realities
627 of productivity, security and technology: survey commissioned by Metova reveals a new
628 normal with 48% saying they are more productive working from home and 57% preferring to
629 work from home in the future. In: *PR Newswire*. New York, NY, USA: 2020.
630 64. **Subramaniam V**. About 1 in 5 staffers prefer to continue working from home: survey.
631 In: *Sudbury Star*. Sudbury, Ontario, Canada: 2020.
632 65. **Chaipuapae P**. Insights into the Effects of Accents on English Listening
633 Comprehension. *Asian EFL J* 23: 30, 2019.
634 66. **Jensen C, and Thøgersen J**. Foreign accent, cognitive load and intelligibility of EMI
635 lectures. *Nordic J Engl Stud* 16: 107, 2017.
636 67. **Nejjari W, Gerritsen M, Roeland van H, and Planken B**. Where does a 'foreign'
637 accent matter? German, Spanish and Singaporean listeners' reactions to Dutch-accented
638 English, and standard British and American English accents. *PLoS One* 15: 2020.
639 68. **Loh C, Wong DH, Quazi A, and Kingshott RP**. Re-examining students' perception
640 of e-learning: an Australian perspective. *Int J Ed Management* 30: 129-139, 2016.
641 69. **Calvo MG, and Gutierrez-Garcia A**. Cognition and stress. In: *Stress: Concepts,*
642 *Cognition, Emotion, and Behavior*. Amsterdam, The Netherlands: Elsevier, 2016, p. 139-144.
643 70. **Vogel S, and Schwabe L**. Learning and memory under stress: implications for the
644 classroom. *npj Sc Learn* 1: 1-10, 2016.
645 71. **Dave M, Ariyaratnam S, Dixon C, and Patel N**. Open-book examinations. *Brit Dent*
646 *J* 229: 149-149, 2020.
647 72. **Green SG, Ferrante CJ, and Heppard KA**. Using open-book exams to enhance
648 student learning, performance, and motivation. *J Effective Teach* 16: 19-35, 2016.
649 73. **Williams JB, and Wong A**. The efficacy of final examinations: A comparative study
650 of closed-book, invigilated exams and open-book, open-web exams. *Brit J Ed Tech* 40: 227-
651 236, 2009.
652 74. **Gupta MS**. Open-book examinations for assessing higher cognitive abilities
653 [Educator's Corner]. *IEEE Microwave Mag* 8: 46-50, 2007.
654 75. **Loi SL, and Teo JCC**. The impact of open book examinations on student learning.
655 *New Horiz Ed* 40: 34-42, 1999.
656 76. **Dabbagh N, and Kitsantas A**. Supporting self-regulation in student-centered web-
657 based learning environments. *Int J E-Learn* 3: 40-47, 2004.
658 77. **McMahon M, and Oliver R**. Promoting self-regulated learning in an online
659 environment. In: *EdMedia + Innovative Learning*. Norfolk, VA, USA: Association for the
660 Advancement of Computing in Education (AACE), 2001.
661 78. **Zimmerman B**. *Handbook of Self-Regulation of Learning and Performance*. New
662 York, NY, USA: Routledge, 2011.
663 79. **Guillén-Gámez FD, Colomo-Magaña E, Sánchez-Rivas E, and Pérez R**. Attitude
664 towards ICT: a statistical analysis of gender differences in Spanish higher education teachers.

25

665 In: *3rd International Conference on Advanced Research in Education, Teaching & Learning,*
666 *Oxford UK*2020, p. 1-11.
667 80. **Siddiq F, and Scherer R**. Is there a gender gap? A meta-analysis of the gender
668 differences in students' ICT literacy. *Ed Res Rev* 27: 205-217, 2019.
669 81. **Tondeur J, Van de Velde S, Vermeersch H, and Van Houtte M**. Gender differences
670 in the ICT profile of university students: A quantitative analysis. *J Divers Gender Stud* 3: 57-
671 77, 2016.
672

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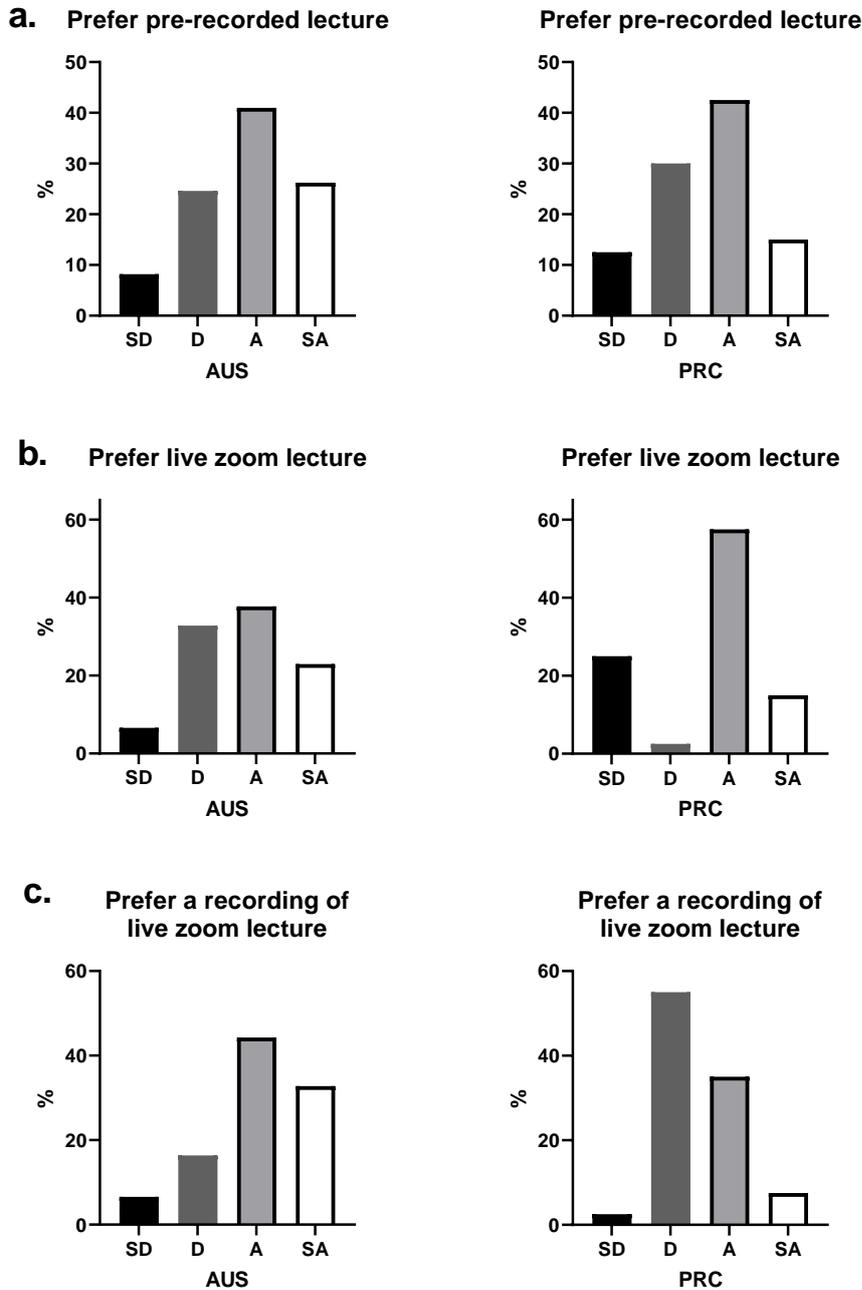
Figure 1: Students' responses to the questions on the format of lectures. The results are expressed as the percentage of total answers (the Chinese campus n=40, the Australian campus n=62). SD: strongly disagree; D: disagree; N: Neutral; A: agree; SA: strongly agree. AUS: abbreviation of the Australian university; PRC: abbreviation of the Chinese university.
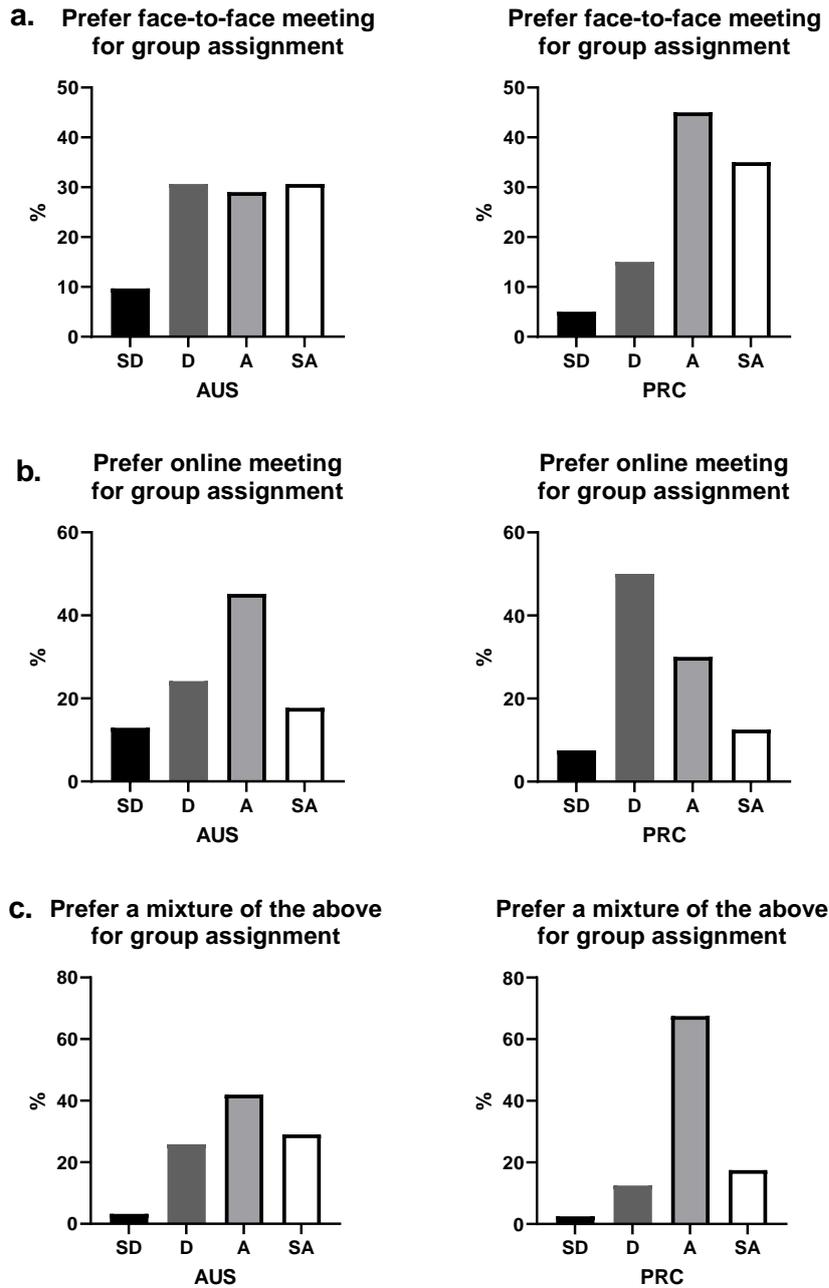
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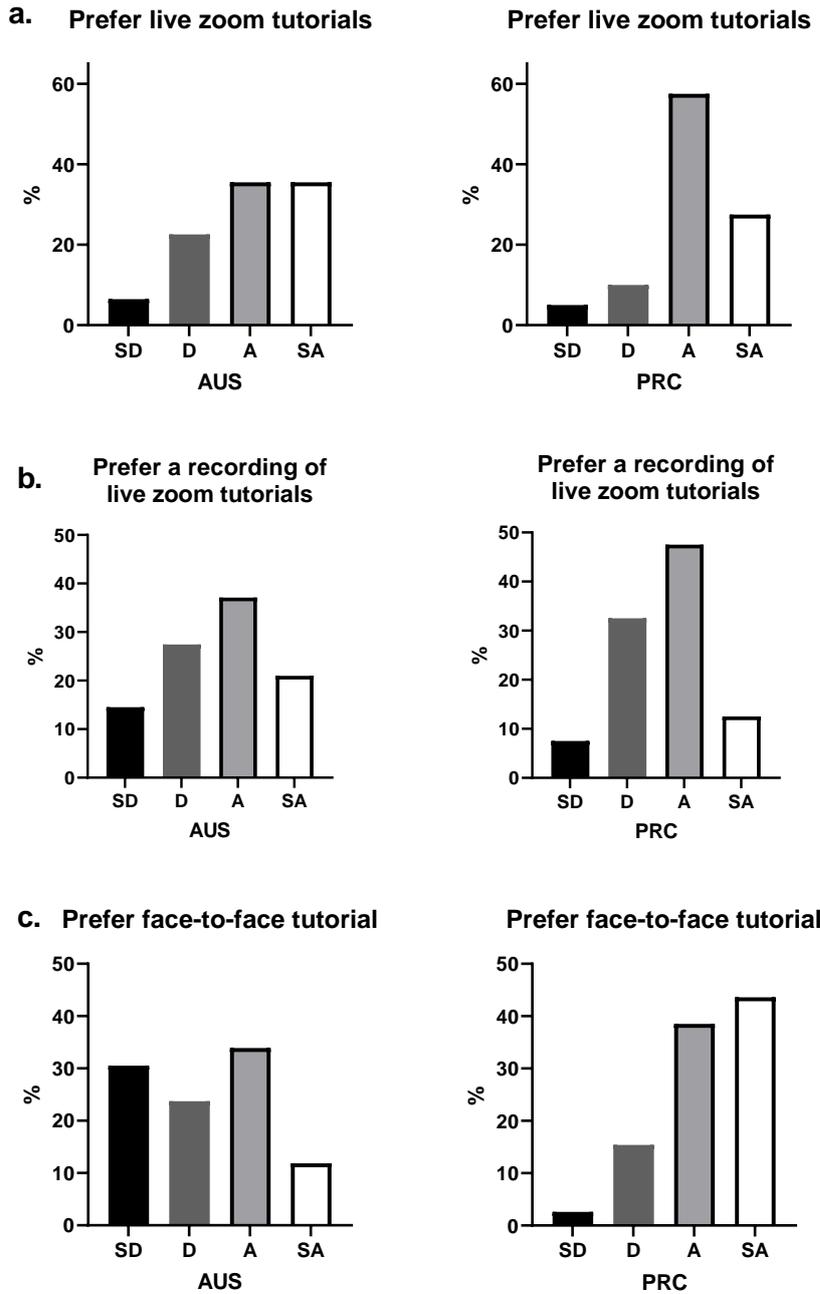
Figure 2: Students' responses to the questions on the format of case study-based tutorials. The results are expressed as the percentage of total answers (the Chinese campus n=40, the Australian campus n=62). SD: strongly disagree; D: disagree; N: Neutral; A: agree; SA: strongly agree. AUS: abbreviation of the Australian university; PRC: abbreviation of the Chinese university.

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Figure 3: Students' responses to the questions on the format of case study-based tutorials. The results are expressed as the percentage of total answers (Chinese campus n=40, Australian campus n=62). SD: strongly disagree; D: disagree; A: agree; SA: strongly agree. AUS: abbreviation of the Australian university; PRC: abbreviation of the Chinese university.

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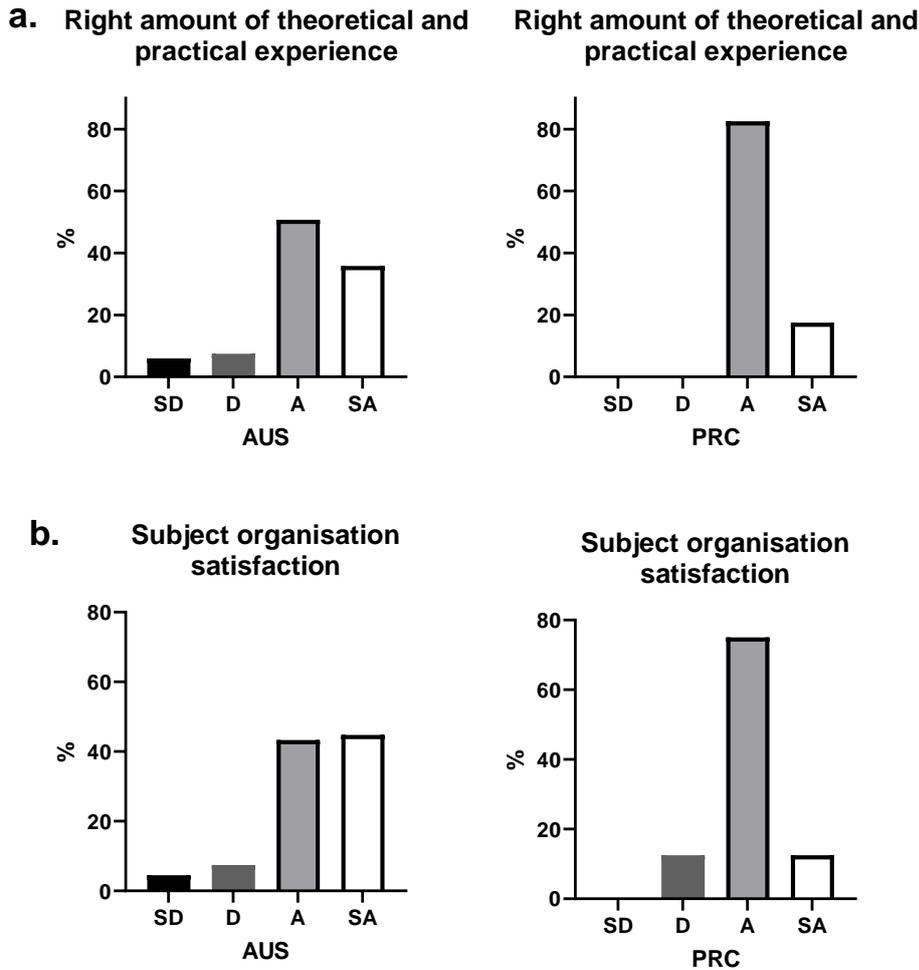
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692 Figure 4: Students' responses to the subject content (a) and organisation (b). The results are

693 expressed as the percentage of total answers (Chinese campus n=40, Australian campus

694 n=62). SD: strongly disagree; D: disagree; A: agree; SA: strongly agree. AUS: abbreviation

695 of the Australian university; PRC: abbreviation of the Chinese university.

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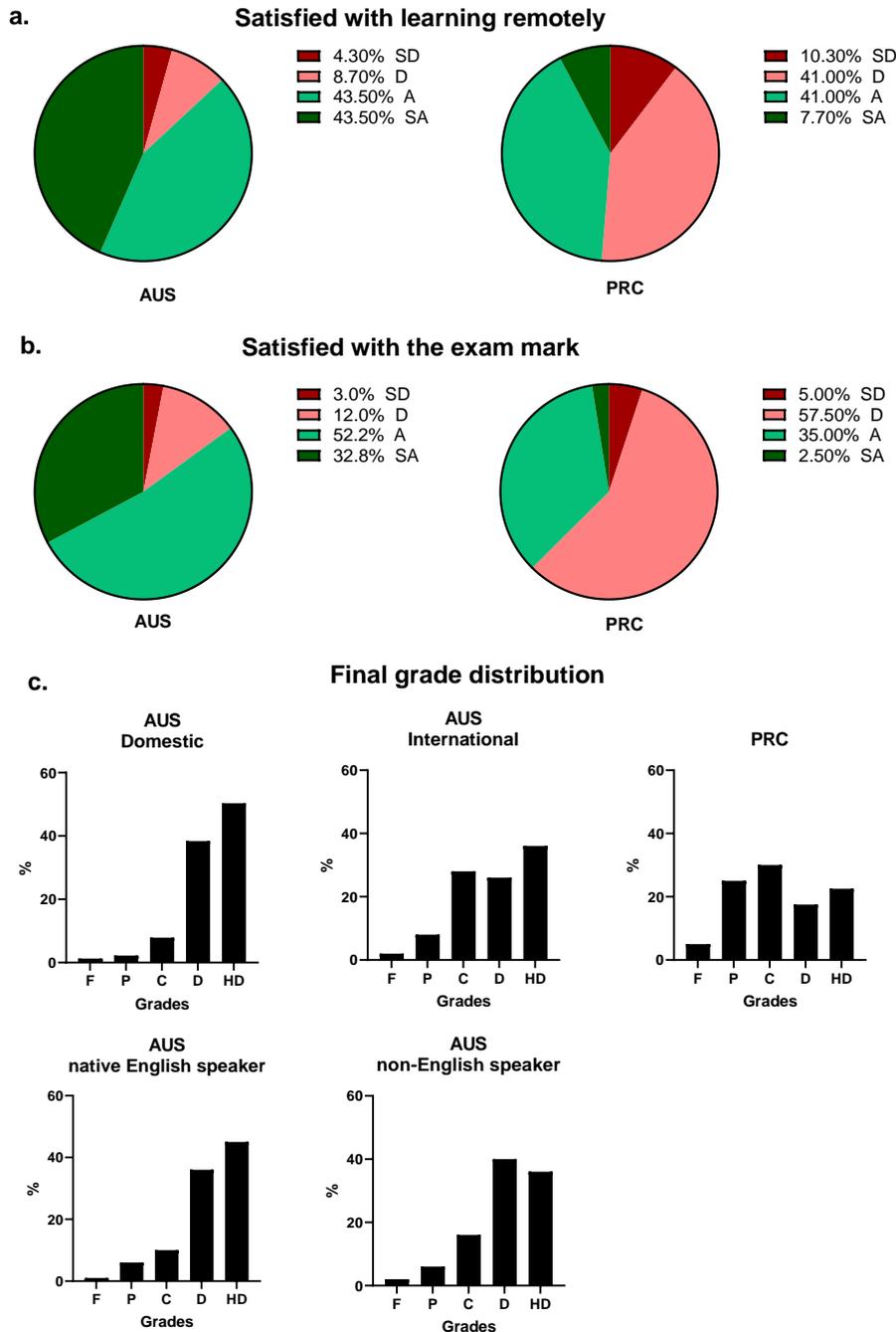
Figure 5: Students' responses to their overall satisfaction on the remote learning (a) and quiz marks (b) (Chinese campus n=40, Australian campus n=62. SD: strongly disagree; D: disagree; A: agree; SA: strongly agree), and the final mark distribution (c, F: fail <50/100; P: pass 50-64/100; C: credit 65-74/100; D: distinction 75-84/100; HD: high distinction 85-100/100) among Australian campus and the Chinese campus students. The results are expressed as the percentage of total answers. AUS: abbreviation of the Australian university;

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704   PRC: abbreviation of the Chinese university.

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Table 1. Survey items. In the survey, "exams" refers to online quizzes.

	Item
1	I prefer to watch a pre-recorded lecture and attend a live zoom Q&A session.
2	I prefer to attend a live zoom lecture.
3	I prefer to watch a recording of the live zoom lecture.
4	I prefer to attend a live workshop/tutorial.
5	I prefer to watch a recording of the live workshop/tutorial.
6	I prefer to attend a live face-to-face workshop/tutorial.
7	I prefer face-to-face meetings for group presentations.
8	I prefer meeting online for group presentations.
9	I prefer a mixture of face-to-face and online meetings for group presentations.
10	I believe this subject provided the right amount of theoretical and practical experience (e.g. case studies, evaluation of laboratory test results).
11	I believe the subject has been well organised.
12	Overall, I feel satisfied with the quality of this subject.
13	I enjoy learning remotely.
14	Overall, I am satisfied with my marks in the exams.

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