**Instructions**

Type your answer in the space provided. You may wish to use a different font or text colour to make your answers stand out. Note that the space is not indicative of the appropriate length of your answer; the text below will move down as you type. The marks allocated to each question **are** an indication of the amount of detail required. You are not required to write an essay in response to any questions; an outline of the pertinent information is all that is required (but the marker must be able to make sense of it). If you use any sources to help answer the questions these must be correctly referenced; inappropriate references will not be accepted.

Answers should be as precise as possible and should answer the question that is **actually asked**. For questions requiring calculations, you are advised to show how you arrived at the answer.

Incorrect or inappropriate information supplied in addition to correct information for any individual question will result in a loss of marks for that question. (Eg the answer will be deemed to be half right and half the available marks will be allotted. The actual percentage will vary depending on the amount of incorrect information relative to the correct information and the number of marks available.) Marks will be deducted for incorrect or inappropriate referencing. No marks will be deducted for poor grammar, spelling etc. providing the answer is intelligible.

Save your file as a Word document with your Student ID in the filename. Upload the completed file to Moodle as usual.

**QUESTION 1**

List the differences between narrative aggregated literature reviews and systematic reviews

**QUESTION 2**

According to the Joanna Briggs Institute, what level of evidence would you ascribe to:

a) a randomised controlled trial

b) a cohort study

Explain why the levels of evidence are different.

**QUESTION 3**

a) Identify the appropriate measurement scale for each of the following:

|  |  |
| --- | --- |
| **Variable** | **Measurement Scale** |
| Annual birth rate |  |
| Body temperature |  |
| Education level |  |
| pH |  |
| Country of birth |  |
| Ranking of journals in a category according to impact factor |  |
| Presence or absence of infection |  |
| Age |  |

b) If you were collecting data on the above variables, which might you measure on a different scale? Which other scale could you use? Identify one advantage and one disadvantage of measuring the variable in this way.

**QUESTION 4**

A class of 30 students received the following marks (expressed as percentages) for their overall assessment.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Student** | **Mark** |  | **Student** | **Mark** |  | **Student** | **Mark** |
| Jessica | 78 |  | Amandeep | 85 |  | Mohammed | 77 |
| Jianxia | 60 |  | Louisa | 60 |  | Yaping | 73 |
| Mark | 82 |  | David | 76 |  | Tracey | 73 |
| Herlina | 52 |  | Rebecca | 70 |  | Abdul | 85 |
| James | 35 |  | Mavilde | 88 |  | Melanie | 62 |
| Emily | 77 |  | Elise | 50 |  | Robert | 24 |
| Ramon | 64 |  | Mishal | 77 |  | Nawal | 77 |
| Hawa | 87 |  | Caroline | 62 |  | Diana | 52 |
| Julia | 50 |  | Zara | 80 |  | Peter | 40 |
| Simon | 76 |  | Sunit | 51 |  | Wendy | 84 |

a) Calculate:

 i) The mean

 ii) The median

 iii) The mode

b) What inference can you make about the distribution of marks?

c) What would be the most appropriate measure of:

 i) central tendency

 ii) dispersion

d) Grades are allocated in the following way:

Fail = 0-49; Pass = 50-59; Credit = 60-69; Distinction = 70-79; High distinction = 80-100

Construct a frequency distribution of the students’ grades. You may present this in table or graphic form.

e) What measurement scale does this represent?

**QUESTION 5**

You purchase batteries for your kitchen clock. The batteries have a mean life of 820 hours, with a standard deviation of 30 hours.

a) The batteries run out after 715 hours. Would you be entitled to a refund? Why?

b) What if the battery died after 780 hours?

**QUESTION 6**

James works in a paediatric surgical ward, where the majority of children are admitted for elective surgery. He is concerned about the level of distress and anxiety children display on admission and the nursing staff, in conjunction with the Play Therapy department and child psychologists, develop a package to prepare pre-school children for their hospital experience. James wants to know whether this package will have an effect on children’s distress.

a) Generate a null hypothesis and an alternate (non-directional) hypothesis for James’s question

 i) Null:

 ii)Alternate:

b) What would be the ideal research design to answer this question? Give reasons.

c) What other design(s) could be used? Why might these be chosen in preference to the one identified above?

d) Identify the main ethical issue for this study.

James and his team carry out the study. They choose an objective measure of children’s distress – salivary cortisol, measured in mcg/dl and expected to be normally distributed.

e) Identify **:**

 i) the independent variable

 ii) the dependent variable

f) What measurement will the researchers use to examine the effectiveness of the package?

g) What statistical test would be appropriate to test the hypothesis?

h) The test is performed and the result generated is p=0.03. Interpret the p-value.

i) What decision would you expect the researchers to make with respect to the null hypothesis ?

**QUESTION 7**

Nurses in an aged care facility are concerned about the incidence of urinary tract infections (UTI) among residents. They wonder whether drinking cranberry juice daily will reduce the number of infections and plan a study to find out. They enrol 240 residents, 120 in each arm. At the end of the study they find that 22 residents who receive cranberry juice develop a UTI, compared with 31 in those who do not.

a) What would be the appropriate statistical test to determine whether this difference is significant?

From the figures we can see that the incidence of UTI in those receiving cranberry juice is 7.5% lower than in those not receiving it (this is called the Absolute Risk Reduction or ARR). The researchers calculate that the 95% confidence intervals around this number are **-2.95** and **17.95**.

b) Interpret the confidence intervals

d) What conclusion will the researchers make regarding the null hypothesis?

**QUESTION 8**

This question uses the Excel file in the Week 9 activities on Moodle.

a) How would you examine the relationship between the participants’ ages and the total attitude score?

b) Carry out the test you identified in part (a). [Hint: find it in the tab Formulas →More functions→Statistical]. Record the statistic generated by the calculation.

c) What can you conclude about the relationship between age and score?

**QUESTION 9**

Sarah is a Nurse Unit Manager in a busy Emergency Department. Her department has experienced an increase in workplace violence in recent months and she is concerned about its effect on the nursing staff. She decides to do some research on this topic using a qualitative approach, with a particular focus on nurses’ experiences of workplace violence and their individual coping strategies.

a) Identify an appropriate methodology for this study and provide a rationale for its use.

b) Identify and provide the rationale for a suitable sampling strategy.

c) What data collection strategy/strategies would be most appropriate for this methodology? Give reasons.

d) What would be an appropriate method of data analysis for this methodology? Give reasons.

e) With reference to the principles of ethical conduct of research, identify the potential ethical problems with this study. How could Sally overcome these?

f) Identify three (3) elements of trustworthiness and provide a specific example of how each could be achieved in this study.

**QUESTION 10**

In the appendix at the end of this document you will find extracts from interview transcripts from a study examining the experiences of lecturers at a UK university. “Susan” and “Fern” are pseudonyms for two of the study participants. The specific question addressed in these extracts is “What are lecturers’ experiences of teaching various types of students?”

a) Comment on the type and content of the questions asked by the interviewer to the two participants.

b) What data is missing from these transcripts? [Hint: think about type of data as well as actual information] As a researcher, how would you rectify this?

c) From the data, identify 2 themes that could contribute to answering the research question. Provide 3 examples of data that would contribute to each theme.

**QUESTION 11**

a) Provide an example of each of the following **:**

 i) a type of research study that **would** require written informed consent from the participants

 ii) a type of study that **would not** require written consent

b) Explain why these types of studies have different requirements.

c) Provide an example of each of the following categories, and give reasons why the type of study would be categorised in this way:

 i) a type of study requiring approval by a full meeting of a Human Research Ethics Committee (HREC)

 ii) a type of study that an HREC would classify as ‘low risk’

 iii) a type of study that would not require ethics approval

**REFERENCES**

**APPENDIX**

**Extract 1: Fern**

Interviewer: Okay, we are now going to focus on students. A question about the attendance and motivation of students.

Fern: I think that’s difficult, I think now we’re treating the preliminary degree as a career grade it’s becoming a bit like school. In a sense you’ve got some kids who love to be there and other kids who can’t be bothered because they’re just going through the motions. And there used to be about 5–10% of people went to university so I imagine you were effectively teaching that minority who really want to be there. But now you have some who are not too bothered; they’re here to get a qualification and get on with their lives, and they’re quite instrumental with that. But people don’t attend because they’re working, they don’t come in because as soon as they know what the assessment is they go to do it and don’t want to learn. They’re not particularly interested in learning they just want to get the assessment and that’s it. So I think to a certain extent that I understand that’s instrumental to students doing reasonably well. They don’t have a breadth of education but they can technically get though the assignment. So I just let them get on with it and concentrate on those who really want to do it, you know. So really it’s like the old university group inside the mass really, so you know I just focus – that’s not true, I don’t just focus on those who are interested. But if a minority, like lectures aren’t compulsory, we don’t take down registers so there might be people not there. But we do take registers in seminars so we have more people there. If I find some people haven’t turned up to class I don’t worry about it because I teach those that are there and those who are there by definition are the most interested. So attendance is a problem, that cynicism of ‘oh let’s get through this’, ‘oh we’ve got to do this degree, let’s get through it’. There’s still loads of interested students but, if they’re not there, then they’re either working or not interested.

Interviewer: Okay, what is your experience of teaching mature students?

Fern: Oh it used to be fabulous, in the good old days when there were grants we had loads and loads of mature students and sometimes up to a third of a course were made up of mature students. And there would be all sorts of people, we had vicars, we had retired miners – all sorts of people coming in. And lots of women who had returned to work after having children. And several of them struggled with it but some of them were really fabulous. In fact we had a couple of mature students just recently on the course; I wouldn’t say more so than other students, but they were here because they wanted to be here. And they were desperate to learn and desperate to know, some of the brightest students we had were the mature students. And I thought it was marvellous taking somebody who had no chance of education and suddenly had the confidence to realise that they could come to learn and I think it’s fabulous. I really, really enjoyed that, you don’t have that now because of course they can’t afford to take the loans out, mature students, they have to work. You know, no government grants, there’s no support for them so they’ve all gone, nearly all gone.

Interviewer: Have you noticed this change since it became a university or just the whole...

Fern: It’s the loss of the grant. I don’t think it’s got anything to do with turning into a university; I suppose there’s also the whole strict admissions and this kind of thing. But I don’t think that’s got to do with being a university because I think traditional universities used to take in more mature students all the time so I don’t think it’s got anything to do with being a university. I think that it’s just to do with increased bureaucracy and the loss of grants.

Interviewer: Have you noticed any differences between the way that students like to be taught? Like more traditional students liking it one way and mature students a different way or?

Fern: I don’t know...

Interviewer: A difference in methods of teaching?

Fern: I don’t think there’s a difference in methods of teaching. I think all students now need the information, they want to know what the assessment is; they want to know what they need to do because they want to know how to get the marks. They really are quite instrumental, whereas the mature students never were here just to get the qualification – that was the icing on the cake. They were here to learn and to enjoy the process. I’m not sure that students enjoy the process any more; I don’t know if students get a kick out of learning anymore, they do it because they have to do it otherwise they won’t get the jobs they want. So whether it’s to do with style of teaching, it’s got to do with the content and the seminars, the attitude is just very, very different – take the information.

Interviewer: What is your experience of overseas students?

Fern: Loads of it through the years. Again, it’s about the same; there was a stage where the international students were quite exceptional: they had quite a struggle to get here and wanted to learn as much as possible. Whereas now we get loads of international students being sent by their government to get trained up, to get qualifications, and therefore they haven’t got a hunger to learn. Well, that’s not true, some of them do. But their priority is to get that qualification in the time scale because otherwise they’ll have to pay the money back or lose their job so people are under that very instrumental pressure, so not doing it for the love of it. I think it’s much the same; I don’t think it’s to do with being an international student but I think it’s to do with being put through the grinder to get the qualifications. And I think that makes it difficult, but many of them are a delight to teach, very interesting, obviously they bring new experiences and different perspectives.

Interviewer: And what about language barriers?

Fern: That’s very difficult because, if people just aren’t experienced, they may not understand what you’re saying. I have quite a fast delivery so I don’t probably teach in a style that students would find useful. I work with PowerPoint but then I explain things and I think that I do that quite quickly, and therefore, if the language isn’t there, I think that to pick up the meaning of what I am saying may be quite difficult. So I do try to repeat things rather than say it slowly, I try to say things two or three times. But yes, I think people seem to learn quite quickly when they get here and have to learn another language. But I know students who can barely speak and still manage to get through it somehow. I think a combination of low motivation, not really being very on top of a subject and not being able to speak – when you’ve got that combination it’s pretty difficult, but I haven’t often seen those combinations all together. For instance I have very able, very polite international students who barely speak English but, as I say, they can still get over it. It’s a mixture really.

**Extract 2: Susan**

Interviewer: What do you think of attendance and motivation of students?

Susan: I think attendance is pretty good, and I think that students vote with their feet, if it’s boring they don’t turn up. So I think they’re not just motivated by assessments but also what they’re going to cover and if they think it’s an interesting subject that they’re going to cover and it’s going to be taught in an interesting way then they’ll turn up. So it says a lot about that but also about timing of classes; we’ve got one lecture from five o’clock to six o’clock but a lot of students work and have children so that’s quite difficult. So I think we’ve got to be careful about looking at how we monitor attendance and whether it’s appropriate at times to monitor the students because the motivation might be there to attend but it might be that there are barriers to them attending at certain times.

Interviewer: And how about motivation to prepare for seminars?

Susan: I think if students are directed what to do then they do it. It’s when it’s in the module documents but it’s a bit woolly, or you haven’t directly said to them, ‘Do this for next week’, then they tend not to do it. But if you say to them, ‘We’re doing this next week, I want you all to bring an example of it’, then they’ll do it. And I think if it’s directed in that sense, then you get quite a good response rate; you always get some that won’t, but on the whole you find that they do.

Interviewer: We’re going to look at student diversity now. What is your experience of teaching mature students?

Susan: Quite a lot, I work with people who are return to learners and people who are practising at the same time as working.

Interviewer: How do you find teaching mature students?

Susan: I really enjoy it because they bring different life experience to the classroom. It’s not just a one-way situation, it’s two-way – you can impart academic knowledge and they can bring practice knowledge and life experience with them.

Interviewer: Have you noticed any difference in the preferred teaching methods of traditional and mature students?

Susan: Yes I find the mature students much prefer non-lecture-based environments and prefer more discussion so it’s two-way. I think that traditional students do like that as well but because of the numbers there isn’t always the capacity to be able to do it, so they get stuck in a rut of the lecture-seminar structure. It’s not necessarily their desire but it’s the structure of the university, the way we deliver and it’s normally bigger numbers so it’s less easy to offer other methods.

Interviewer: Do you have any experience of teaching overseas students?

Susan: Yeah I’ve got overseas students on undergraduate and postgraduate programmes at the moment so I’ve got quite a bit of experience.

Interviewer: Do you find any language difficulties?

Susan: I have at the moment, I’ve got one particular student who has language difficulties but the biggest problem with teaching in this area is often the cultural differences as well and how we define concepts. It’s often a bigger issue than the language, because what some people take as ‘normal’ for want of a better word – what the UK students see as normal, international students will say ‘that’s so way out from what we would do’. That’s great in the sense that it makes you look at different examples but I can think of one example at the moment of a student who is finding it difficult to relate to the theory because the ideology it’s based on is so different from that of his home country.

Interviewer: How about the English used in your subject area, is that a different sort of language from everyday English?

Susan: Yes, they find the terminology quite difficult and so you’ve often got to explain the terminology and I make sure I do that. But I think that UK students struggle with academic terminology a lot as well, so I’m always wary of academic snobbery – of using specialised terminology too much. It actually puts some people off the subject – they don’t engage with the content because they’re too busy trying to work out what the words mean. So I think that falls across both groups.