STRATEGIES
FOR
ONLINE
EXAMS

This job aid describes several suggestions for how to design and deliver online exams to maintain validity and reliability.



# Definintions:

* Valid: the exam’s results are accurate in terms of measuring achievement
* Reliable: the exam’s ability to provide the same result every time

## This job aid provides best practice tips for designing, implementing and reviewing online exams. The focus here is on exams that include multiple choice, True or False or short answer questions. Online assessments such as presentations, papers or poster projects are not addressed in this job aid. For more information about setting up your quiz in the Learning Hub using the Respondus Quiz Tool, you can visit the Learning and Teaching Help Centre and search for articles here https://ltc.bcit.ca/help/category/desire2learn/quizzes/.

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## **Exam Design**

Consider the following tips when designing your online exam.

* **Create an Exam Bank**. This means you will collect many questions that could be applicable for the exam – *more than you need*.
	+ This increases validity as equally appropriate questions can be mixed or swapped to ensure novelty without compromising content.
	+ See the implementation section for more information about how randomization (mixing or swapping) can be done.
* **Create an Exam Bank Map of the questions** (also called Exam Blueprint). This is where you map all your Learning Outcomes that the exam is meant to measure. Then, map which questions align to which Learning Outcome (LO). Ultimately, in terms of choosing questions for your exam, this allows you to ensure:
	+ You are measuring every LO you should be measuring.
	+ You are choosing the correct number of questions for each LO so that they are properly weighted. For example, if you want every LO equally weighted, you need to ensure you choose questions so that each LO receives the same number of points on the exam.
	+ See Exam Bank Map Template for an example.
* **Map the level of the questions according to Bloom’s Taxonomy –** a taxonomy of cognitive processes from simple to complex which reflects levels of learning**.** (For more information, see the BCIT LTC job aid Writing Learning Outcomes.)
	+ This is a further step to ensure that the questions in your exam bank are actually measuring the LOs at the appropriate level.
	+ Some questions may not be at a high enough level, but may still be a useful scaffolding question. In this case, you want to ensure that they are chosen for your final exam *in addition to* other questions that do measure the LO at the appropriate level.
* **Create questions that require analysis and application.** This is linked to the previous point.
	+ Depending on your course, at least some of your LO are likely beyond a Remember level on Bloom’s Taxonomy. The level of LO in the course and the level of thinking required on the test must match. If LO are apply level then questions must be at the same level. If LO are at create level then questions must also be at that level. These kinds of questions increase validity of an exam because even if learners have access to a textbook, the answer cannot be found directly on the page since the information or theory must be applied to discern the right answer.
	+ Consider creating short answer questions that do not have one right or wrong answer, but require analysis or justification, if this aligns with your course’s LO. These require more marking, but create a more valid assessment as they require a higher level of thinking (as appropriate) and reduce the risk of cheating.



## **Exam Implementation**

* Before the exam even begins, **foster a culture of honesty in your class**. Consider creating Learning Contracts at the beginning of your term which include academic honesty as a tenet of the group’s participation in class – including exams.
	+ You may refer to BCIT policy 5104 – Student Code of Academic Integrity at https://www.bcit.ca/files/pdf/policies/5104.pdf.
* **Randomize your questions.** Randomization increases validity of the exam.
	+ Randomize the questions that learners receive in an exam. In other words, two different learners receive different questions in the same exam.
		- This kind of randomization requires a robust Exam Bank that has more questions than you need for any one exam or quiz.
	+ Randomize *the order* of the questions on an exam. In other words, two different learners will ultimately have the same questions on their exam, but they appear in a totally different order in the exam.
	+ Randomize the questions for exams in different terms. In other words, each term’s exam is slightly different from the other. But all learners in one exam will get the same questions.
* **Randomize your answers.** Randomization of answers also increases validity of the exam.
	+ For Multiple Choice questions, randomize *the order* of the answers for any given question. In other words, two different learners will ultimately have the same answers to choose from, but they appear in a totally different order in the question.
* **Set a (reasonable but narrow) time limit.** This may depend on your field. This will certainly depend on the level of your questions – if they are simply recall questions, you can expect a shorter response time; if the question requires application, you will expect a longer response time. In any case, ensure that your time limit is reasonable but narrow to decrease the opportunity for cheating.
* **Allow only one attempt on an exam.** There may be situations where more than one attempt is suitable, but generally, for a summative exam, one attempt improves validity and reliability of the exam.

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## **Exam Review**

* **Do not share the entire exam** after marking with learners. This creates opportunities for snapping photos of questions to be shared far and wide.
* **Do not share answers for the entire exam**. Again, with phones and computers, screen shots, photos etc. can be taken and shared.
* Instead, **create a summary of the most-often-missed questions**, the general strengths and weaknesses of that cohort’s performance in the assessment, and even highlight questions that required deeper or more complex analysis. This is valuable feedback for a learner to get a sense of where they are on track and where they need to review.
* **Set up office hours** if a student has more specific questions about their individual exam