

# IKM's Adaptive Methodology

Provides the greatest level of feedback on the assessment-taker in the shortest possible time

IKM's proprietary adaptive methodology offers unparalleled insight into an assessment-taker's knowledge using powerful algorithms, scoring, weighting and scheduling.

Assessment results are stored in a Human Intelligence Database (HID) to produce detailed proficiency profiles that highlight knowledge levels at task or sub-topic levels.

Further analysis at individual or group level is made easy with IKM SkillSearch™, IKM CompareScores™ and IKM Skill Gap Analysis™.

## Adaptive Testing

Adaptive testing methodology selects questions with a specific level of difficulty based on the assessment-taker's previous responses. The adaptive testing engine "adapts" the question selection process according to the assessment-taker's abilities, eliminating questions that are too easy or too difficult for the assessment-taker. This method of assessment allows the collection of required feedback with far fewer questions.

Adaptive questioning is the most efficient and effective means for knowledge-based assessments.

- **No time wasted on questions not suitable for the assessment-taker**
- **Assessment-takers continually challenged by questions at their demonstrated knowledge level**
- **Quicker assessments are less disruptive to employer, employee and candidates**

## Compare Adaptive Testing to a High-Jumping Event



The basic concept behind adaptive testing can be compared to that of a high jump. For example, if the jumper fails to clear 5 feet, the bar is lowered to 4 feet. Raising the bar above 5 feet at this point would be a waste of time since it is already established that the jumper cannot clear 5 feet. At 4 feet, the jumper clears the bar so it is raised to 4.5 feet. There is no reason to lower the bar below 4 feet because the jumper has already demonstrated his ability to jump over 4 feet. And so the process continues. This concept is easily transferred to the process of selecting questions, ensuring the desired degree of difficulty is posed to the assessment-taker.

## Use IKM's methodology as a platform

IKM's methodology has been designed in such a way to allow flexibility and compatibility. This means you can use IKM's methodology:-

- **For the creation of any assessment or certification program**
- **To integrate with other LMS systems**



## Random Question Selection

Once the adaptive testing engine has evaluated the assessment-taker's prior response and determined the appropriate level of difficulty for the next question, a follow-up question with the desired degree of difficulty is randomly selected from a pool of available questions at that difficulty level. IKM maintains several pools of questions at various levels of difficulty allowing individuals to take an assessment more than once and receive different questions that are assigned the same level of difficulty.

- **Ensures the assessment-result is a true measure of the individual's knowledge, and not a reflection of their ability to learn and study test questions**
- **Provides an effective measurement tool for both pre- and post-training**

## Sub-topic Assessment

IKM's unique methodology breaks each discipline into 12-18 sub-topics, reflecting varying tasks that collectively cover the key aspects of the discipline. Each sub-topic contains its own pool of questions at all the difficulty levels, allowing the adaptive methodology to be employed independently within each sub-topic.

By adapting independently within sub-topics, each areas can be evaluated and identified as a specific strength, weakness or proficiency.

- **Greater result accuracy**
- **Improved decision making capability provided by detailed sub-topic analysis**
  - **Which specific areas is training required?**
  - **Which specific functions within this position can the candidate adequately perform?**

## Degree of Difficulty of Questions

Question weights are a set of values assigned to each question that are used to measure the level of difficulty and relative importance of the question content. The more difficult the question, the more credit gained for a correct answer. The less credit that is lost for an incorrect answer. Conversely, the easier the question, the less credit gained for a correct answer and so on.

In an adaptive test, the number of correctly answered questions is not nearly as important as the difficulty and relevance of those questions. For this reason, all IKM questions are weighted for difficulty and importance.

- **Provides greater insight into knowledge levels than a simple correct / incorrect assessment**
- **Provides greater scope to demonstrate knowledge**
- **Eliminates influence of guessing**
- **Ensures relevance of results**
- **Allows distinct scores and percentiles**

### IKM's Adaptive Methodology is available for:

- **IT**
- **Project Management**
- **ERP**
- **Basic Computer Skills**
- **Customized Assessments**
- **Certification Programs**



## Multiple Correct Response

IKM's questions are uniquely formulated to provide the maximum feedback, enabling the assessment-taker to express a very wide range of understanding in each question. This is accomplished through a methodology called 'Multiple Correct Response.' Each question has five possible answers, of which up to three can be correct. The assessment-taker is never told how many correct answers there are to any given question, but they are allowed to select up to three answers. By enabling the selection of up to three answers out of the five provided, there are actually 25 unique answer combinations to every question.

### CHOOSE UP TO 3 CORRECT ANSWERS

If the possible answers to a question are A,B,C,D and E, then the 25 possible answer combinations would be:

1. A	6. AB	11. BD	16. ABC	21. ADE
2. B	7. AC	12. BE	17. ABD	22. BCD
3. C	8. AD	13. CD	18. ABE	23. BCE
4. D	9. AE	14. CE	19. ACD	24. BDE
5. E	10. BC	15. DE	20. ACE	25. CDE

Each one of these 25 combinations implies a different level of knowledge about the question topic. Each has its own unique credit value based upon the combination of answers selected and not selected, and each combination leads to a different level of difficulty in the follow-up question.

- **Credit is gained for every correct answer selected**
- **Credit is lost for every incorrect answer selected**
- **Credit is also lost for every correct answer that is *not* selected**

Just as the questions are weighted, so are the individual answers. The amount of credit gained or lost with each answer is determined by the comparative correctness of that answer. Some incorrect answers are so far off the mark that selecting them indicates that the assessment-taker is guessing, which results in the loss of a lot of credit. Other incorrect answers can indicate a certain amount of partial knowledge and therefore be 'reasonably wrong', resulting in less loss of credit than a totally unreasonably wrong answer. In this manner the assessment-taker can receive or lose an amount of credit proportional to their level of their answer selections.

- **Empowers the assessment-taker to express his/her exact understanding on a wide range**
- **Provides a full range of partial credit proportional to the correctness of the responses**
- **Increases accuracy, reliability and usability**

## Percentile Rankings

Percentiles are used as a form of ranking. A score in the 60th percentile means that the score is higher than 60% of all scores in that exam. The value of a percentile is determined by the make-up of the population contributing to the test scores and is a relative measure within that population. IKM's percentile pools are populated entirely with scores from highly skilled professionals who claim to make their living in that discipline.

- **Provides a benchmark for individual comparison**
- **Offers insight into market level of competencies**

### Your assessment methodology checklist:-

- ✓ Uses adaptive-testing
- ✓ Includes independent sub-topic testing
- ✓ Provides multiple correct responses
- ✓ Produces powerful and detailed reports
- ✓ Stores candidate results in a database for future analysis
- ✓ Allows easy integration with other systems
- ✓ Includes easy to use test creation tools

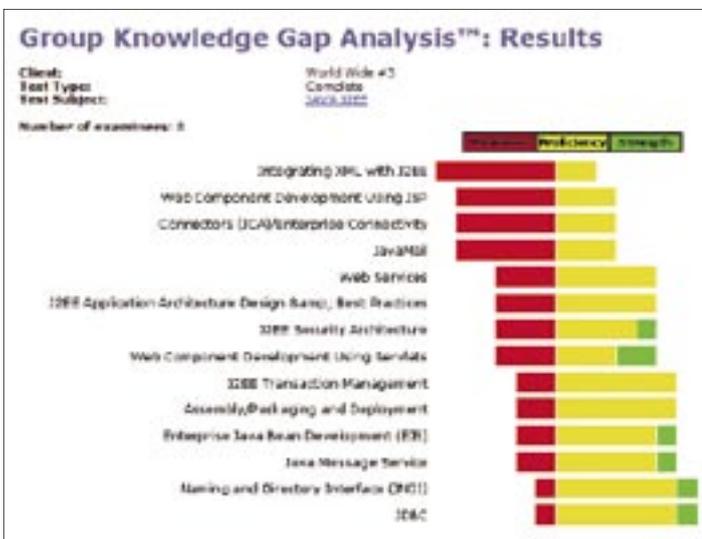


**Use IKM when you want to assess your candidates or employees in more detail, but in half the time.**

## Determine Absolute Strengths and Weaknesses

Unlike traditional assessments that provide a single score (say 75%), IKM provides detailed assessment results in various sub-topics, providing you the ultimate tool in HR decision-making.

**Example:** Your organization requires a Java programmer predominantly to handle XML integration. You assess individuals and identify a candidate who achieved 75% for the Java assessment. How do you know the 75% includes adequate knowledge of XML integration? With IKM's results, you know exactly what the candidate does and does not know!



Sample assessment results for a Java J2EE Programmer.

**Assessment results are stored in a database for future searches, reporting and analysis.**

## Sample Question Type

The example below is not an actual question from an IKM assessment, but is intended to illustrate the multiple correct response methodology.

Which of the following are states in the United States of America?

- Texas
- Paris
- California
- Jupiter
- Washington D.C.

Let us examine just a few of the 25 answer combinations to this question:

Selected Answers	Interpretation	Follow-up Question
Texas and California	Correct answer. Receives the most credit and hardest follow-up question.	Very Difficult
Texas	Partially correct. Credit received for selecting Texas but credit is lost for not selecting California.	Difficult
Jupiter	Incorrect. Test taker is most likely guessing.	Easy
Jupiter, Paris, Washington, D.C.	Worst possible answer. Maximum credit lost and easiest follow-up question selected.	Very Easy
Texas and Washington, D.C.	Partially correct. Provides more credit than 'Texas and Paris' because, although it is incorrect, it is a District not a State, selection of Washington D.C. shows more understanding of U.S. Geography than Paris.	Medium

## Assessment Customization

You can take advantage of IKM's powerful assessment methodology for any discipline or any purpose.

Assessments and certifications can be easily customized to suit your specific environment. You may extend, combine or create assessments quickly using IKM's assessment tools, or have IKM do it for you.