Development of Mathematics Diagnostic Evaluation Items according to the Learning Hierarchy: Focusing on the Statistical Literacy of Middle School Students.

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- **Abstract:** This study was conducted to develop a diagnostic tool that reflects statistical literacy at the middle school level according to the mathematics learning hierarchy and to examine its applicability to the educational field. In order to develop diagnostic evaluation items, the mathematics learning hierarchy was subdivided and statistical literacy factors were included in the achievement criteria. The scope of development of the diagnostic tool is the entire statistics unit for the first year of middle school, and was developed according to the 2015 revision mathematics curriculum in Korea. The revised mathematics textbook was used for the development of diagnostic evaluation items, and the developers modified the textbook problems to suit the purpose of research or developed their own. In order to examine the appropriateness of the diagnostic evaluation items, three mathematics teachers were used as expert review members, and evaluation criteria for review were prepared based on previous studies. Each criterion was evaluated using Lynn (1986)'s content validity index. The researcher developed a draft of the diagnostic tool and, after expert review, developed the final version. The diagnostic tools of four units, i.e., 'Stem and leaf plot', 'Frequency distribution table', 'Histogram and Frequency distribution polygon', 'Relative frequency' were developed. In the final version, the code of the diagnostic tool was revised, the achievement standards were subdivided from the draft, and several diagnostic evaluation items were improved.