

# A CONTENT VALIDATION ANALYSIS: FROG STREET AIM OBSERVATIONAL ASSESSMENT BIRTH - AGE 5



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## Executive Summary

*The Frog Street AIM Observational Assessment for Birth to Age 5 (FS AIM)* is an age-appropriate, curriculum-based embedded assessment (CBEA) scale which has as its purpose to assess children individually from birth through 5 years old. FS AIM, created in 2018, is an easy-to-use, comprehensive early childhood assessment that measures developmental domains which are aligned with early learning disciplines. FS AIM includes the following Domains: Social Foundations, Language and Literacy, Cognition/ Mathematics, Cognition/ Science, Cognition/ Social Studies and Perceptual, Physical, and Motor Development. These Domains are aligned with the Head Start Early Learning Outcomes Framework which was developed in 2015 and are operationally defined with 13 strands (Social Emotional, Approaches to Learning/Executive Functioning, Speaking and Listening, Reading, Writing, Number Sense, Operations and Algebraic Thinking, Geometry and Measurement, Skills and Processes/Life Science, Government, History, Coordination, and Health) and 34 concepts. The Domains also capture 60 indicators of children's early learning progressions which have three possible

ranges (Emerging, Progressing, and Ready) within nine levels which progress from Level One (Infant, 0 – 9 months) to Level Nine (Kindergarten, 5 to 6 years old). FS AIM includes six methods for portfolio documentation of these learning progressions to be recorded in web-based, online format. They are: Observational, Anecdotal Record, Work Sample, Audio Video Recording, Learning Photo, and Documented Conversation. Each method is explained in detail as to how evidence can be gathered as a curriculum-embedded assessment.

## **The Purpose of the Analysis**

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The specific purpose of the analysis was to produce a content validation analysis of the FS AIM, including six domains, 34 concepts, 60 indicators, nine levels, and three ranges of competence. Additionally, the Research Team conducted a face validation of the alignment to *Head Start Early Learning Outcomes Framework: Ages Birth to Five* developed by U.S. Department of Health and Human Services.

To accomplish the purpose, the Research Team used the following framework for carrying out the work:

1. Develop a theory of action;
2. Review the structure of FS AIM;
3. Review domains, strands, concepts, and indicators of the FS AIM Assessment;
4. Review the content and rating scale of each indicator;
5. Review and validate the FS AIM alignment to Head Start Early Learning Outcomes Framework, and
6. Conduct a methodical content validation analysis for the FS AIM.

## Theory of Action and Methodological Process for the Content Validation Analysis

Following is a theory of action developed by the Research Team for this descriptive analysis. The theory of action, found in Figure 1, addresses what the Research Team would like to have occurred positively from the overall study.

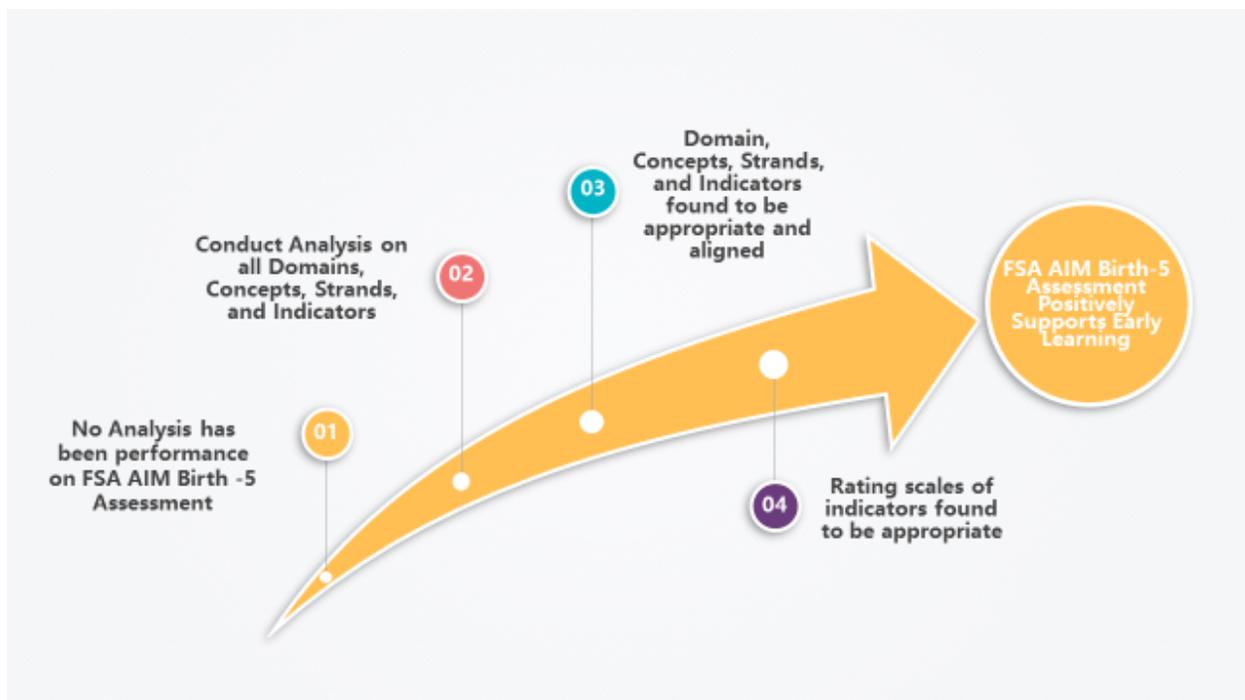


Figure 1. Theory of action for the analysis of FS AIM.

The methodological process used in this analysis was a quantitative approach for content validity introduced by Lawshe (1975). Lawshe presented this process in terms of job performance and stated, “Content validity is the extent to

which communality or overlap exists between (a) performance on the test under investigation and (b) ability to function in the defined job performance domain” (p. 566) and “content validity analysis procedures are appropriate only when the behavior under scrutiny in the job performance domain falls at or near the ‘observation’ end of the continuum; here, those who ‘know the job’ are normally competent to make the required judgments” (p. 566). We make the assumption that the observational instrument FS AIM, as a curriculum-embedded assessment, can be completed by teachers who know their job and early childhood functions are competent to make judgements using this instrument. Therefore, we applied the process that Lawshe recommended with five panel members who have experience in assessment and early childhood progressions.

The main purpose was to determine the degree of agreement among the 5 raters on each of the items in AIM. Informed by Lawshe’s (1975) quantitative approach on content validity, we developed a rubric listing all items, with three options for each item, i.e., “essential”, “useful but not essential”, and “not necessary”. Each panelist completed a rubric measuring the indicators as Essential, Useful but not Essential, or Not Necessary. The panel also noted if there were indicators that were Essential, but that were not present.

In terms of quantifying the consensus of the panel, Lawshe stated:

When all panelists say that the tested knowledge or skill is 'essential,' or when none say that it is 'essential,' we can have confidence that the knowledge or skill is or is not truly essential, as the case might be. It is when the strength of the consensus moves away from unity and approaches fifty-fifty that problems arise. (p. 567).

Furthermore, Lawshe proposed two psychometric assumptions:

Any item, performance on which is perceived to be "essential" by more than half of the panelists, has some degree of content validity," and "The more panelists (beyond 50%) who perceive the item as "essential," the greater the extent or degree of its content validity" (p 567).

From these assumptions, he advanced a formula for content validity ratio (CVR) in which " $n_e$  is the number of panelists indicating 'essential' and  $N$  is the total number of panelists" (p. 567). The formula follows:  $CVR = (n_e - N/2) / (N/2)$ .

Intuitively, CVR is an item-level statistic for the rejection or retention of specific items ranging from -1 (perfect disagreement) to +1 (perfect agreement). CVR is negative when fewer than half of raters rate "essential." It becomes 0 when the panel is split in its rating; and it is calculated as positive when more than half but

less than all rate the item as “essential” (Lawshe, 1975; Wilson, Pan, & Schumsky, 2012). We used the threshold proposed by Wilson et al. (2012) to determine acceptance of an item based on CVR.

The expert panel reviewed 60 indicators of AIM, and 9 levels under each indicator. Each age group is considered an independent item and thus rated by the panel. For example, the indicator, “Emotional Expression,” can be measured in nine age groups with level 1 for 0-9 months, level 2 for 8-18 month, ... , and up to level 9 for 5- to 6-year-old. The panel experts rated “Emotional Expression” of level 1 independently and marked it as “not necessary,” “useful but not essential,” or “essential.” If all experts rate this indicator of level 1 as “essential”, the CVR is calculated as 1, indicating that experts agree 100% that “Emotional Expression” is an essential indicator for the age group 0-9 months.

## **Analysis Results and Recommendations**

Based on the content validation analysis, we offer results and recommendations to enhance the FS AIM. The findings are that the FS AIM is easy to use and follow as an online assessment. It is an easy documentation of learning progressions that are presented about children and that can be embedded within any early childhood curriculum. The FS AIM is comprehensive of early learning outcomes and is aligned with the Head Start Early Learning Outcomes. The rating scale ranges of learning progressions are easily marked and are explained in the directions for use.

Our recommendations are intended to improve the comprehensive assessment to improve the quality of learning for children from birth through 5. The recommendations that we make, based on the general review include some changes in word usage and meaning to the teacher in the examples provided under indicators, further explanation of the ranges, an included sample of a portfolio, and the addition of 28 indicator descriptions for analysis which did not appear as present. The findings can be used to strengthen teaching and learning via the FS AIM at the different age levels from birth through age 5.

## **Benefits of the Content Validation Analysis of the FS AIM**

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The content analysis provides the Frog Street Press curriculum and assessment team the opportunity to improve its comprehensive, curriculum-embedded assessment, FS AIM. The improvement to the FS AIM should yield:

1. An accurate estimation of learners' development in different disciplines including Social Foundations, Language and Literacy, Mathematics, Science, etc. at different age levels;
2. Comparable data between age-groups to see children's development trajectory;
3. More reliable data to guide the instruction of all early learners;
4. Enhanced credibility for the FS AIM;
5. Ease of use for those early childhood programs that may wish to use the assessment, but not the Frog Street B-Pre-K Curriculum, and
6. Enhanced learning experiences related to improved instruction that is based on data gathered from assessment.

## Findings of the CVR Analysis

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After completion of rating AIM, we calculated CVR for each item. The CVRs are 1s for all items that have been evaluated in the instrument showing the five raters to be in perfect agreement on the coverage of the assessment's learning progressions in regards to early learning outcomes. There are some items: A3.6, A4.2, A4.4, A4.6, A4.8, A8.3, B3.6, B3.8, B7.6, B8.6, and B8.8 under the domain of Social Foundation, A7.6, A7.8, B4.2, B4.6, B4.8, and B5.4 under the domain of Language and Literacy, A4.2, A.4.6, C3.3 under the domain of Cognition Mathematics, and A1.6, A2.6, A3.6, A4.6, A5.7, B1.3, and B2.3 under the domain of Perceptual, Physical, and Moral Development, that were rated as "essential" by the panel, however were not present in the AIM instrument. Note: Upon review of preliminary results, Frog Street has added all suggested items above to the learning progression indicators in the assessment.

## Conclusions and Recommendations

Following the Theory of Action noted in Figure 1, the Texas A&M University Research Team concludes that the Frog Street AIM Birth to Age 5 is comprehensive of the necessary learning progressions to measure student growth and achievement as it relates to early learning outcomes. The research team also found Frog Street AIM to be aligned with the Frog Street Curriculum as a sound curriculum-based assessment and that it is aligned to the Head Start Guidelines. Therefore, the Team concludes that the FS AIM could be used with curriculum to aid in monitoring students' progress in multi-domains and benchmarking students as they move through the curriculum and could serve as a positive instrument for teachers as they reflect on their work in order to improve their instruction based on data. Additionally, we conclude that the Frog Street AIM Birth to Age 5 is a general assessment that could be aligned with any rigorous

Birth to Pre-Kindergarten curriculum and used to assess differing childhood progressions in learning.

There are some general recommendations for both teacher fidelity and practice and future development initiatives of the assessment. Those recommendations follow:

#### Teacher Fidelity and Practice-

1. It is recommended that all the testers receive comprehensive and explicit training of the Assessment.
2. The Assessors will need to have training for specific differentiation of among the three levels of Emerging, Progressing, and Ready for each level of each indicator.
3. It is recommended that the FS AIM be used in planning students' learning trajectories.
4. It is recommended that the FS AIM be used in the development of students' IEP plans.

#### Future Development Initiatives:

5. Considering more and more Birth to Pre-K students are non-English native speakers, we recommend Frog Street be very sensitive to the Assessment in a variety of languages (e.g., Spanish, Chinese, etc).
6. Since the Assessment is observational in nature, it is recommended trained testers establish the inter-rater reliability of the Assessment.
7. It is recommended that the assessment provide a norming table for transferring the ratings (Emerging, Progressing, and Ready) into standards scores.
8. It is recommended that the cut-off point scores of FS AIM be established or validated on empirical data.
9. It is recommended that “how to” develop local norms be included in a Guide or Manual.

## References

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