Phase 1: Proposal

# Domain Understanding

## Maastricht University

Maastricht University (Universiteit Maastricht) is a well-known Dutch university located in the city of Maastricht, the Netherlands. The university is renowned for its international character and innovative educational methods. Maastricht University has multiple faculties and offers a wide range of bachelor's, master's, and PhD programs in various fields, including medicine and health sciences, law, economics, arts, and social sciences.

The university is also recognized for its Problem-Based Learning (PBL) approach, which encourages students to actively participate in their own learning process and tackle complex issues. Maastricht University is highly ranked in international rankings and attracts students and academics from around the world. It is a leading institution of higher education in the Netherlands and Europe.

<https://www.maastrichtuniversity.nl/about-um>

## The Five Dot Test

The Five Dot Test, also known as the Design Fluency Test, is a cognitive assessment tool designed to measure an individual's ability to generate as many diverse and original designs as possible within a specific time period, using a limited set of shapes and lines. The test typically involves displaying a grid with five dots and connecting these dots to create unique patterns.

The Five Dot Test is often used in research to explore various aspects of cognitive function, including:

1. **Executive Functions**: The test can provide insights into a person's capacity to apply strategic thinking processes when generating designs.
2. **Working Memory**: The ability to remember the five dots and use them in creating designs.
3. **Creative Thinking**: The ability to come up with original and diverse designs within the given constraints.

The Five Dot Test is often conducted under standardized conditions, meaning there are specific instructions and time limits to ensure consistency in the assessment. It can be applied to various populations, including children, adults, and older individuals, and has valuable applications in neuropsychological research and clinical assessments.

The traditional scoring method involves assigning a specific time interval (e.g., 90 seconds) and then counting all the unique patterns generated, subtracting any duplicates.

<https://app.diagrams.net/#G1ZnMBsSesW0elvxvbbAYP8drdYvStngMT>

## Test at primary school (Eindtoets)

The "Eindtoets op de basisschool," known in English as the "Final Primary School Test" or "Primary School Leaving Examination," is a standardized test typically administered at the end of the primary school period. This test is designed to assess the academic level and knowledge of students and determine if they are ready to progress to secondary education.

Key points about the Final Primary School Test, including an explanation of the scoring range and associated recommendations, are as follows:

1. **Evaluation of Basic Skills**: The test usually assesses core skills that students have acquired during their primary school education, such as reading, writing, mathematics, and comprehension.
2. **Level of Proficiency:** It measures the level of proficiency in these basic skills and assesses whether students are adequately prepared to enter the next phase of their education.
3. **Study Advice**: The results of the Final Primary School Test are often used to provide students with study advice for secondary education. Depending on their performance, students may be recommended for different levels or streams in secondary education.
4. **Standardized**: The test is standardized, meaning that all students answer the same questions under similar conditions. This helps in the objective assessment of performance.
5. **Scoring Range**: The scoring of the Final Primary School Test typically falls within a specific range, such as 500 to 550 points. The exact range may vary by country.
   1. A score in the range of 500-550 points often corresponds to specific recommendations for secondary education. For instance, a score in the upper range might lead to a recommendation for more academically challenging programs, while a score at the lower end could suggest a different educational track. These recommendations help guide students towards a suitable level or stream in their secondary education.

The Final Primary School Test represents a significant moment for students, parents, and educators, as it influences the transition to further education and provides students with an opportunity to showcase their academic achievements and receive tailored advice for their educational path.

## Impact of AI

The impact of artificial intelligence (AI) in the field of standardized tests, such as the Primary School Leaving Examination, can be both positive and negative

### Positive impact

1. **Efficiency and Accuracy**: AI can contribute to more efficient test management, including automatic scoring. This can improve the speed of the evaluation process and reduce human errors.
2. **Adaptive Testing**: AI can enable adaptive testing, where the difficulty of questions adjusts to the student's level. This provides tailored questions that more accurately measure their skills.
3. **Quick Results**: AI-assisted assessment can provide faster access to results, allowing students, parents, and teachers to receive feedback earlier.
4. **Performance Analysis**: AI can help analyze performance data on a larger scale, enabling educational institutions to identify trends and improve curricula.

### Negative impact

1. **Bias and Fairness**: If AI systems are not well-designed, they can contain inherent biases, potentially leading to unfair results, especially for minority groups.
2. **Privacy Concerns**: Collecting and storing data for AI-based tests can raise privacy concerns, particularly for tests that require personal information.
3. **Loss of Human Interaction**: The use of AI can lead to reduced human interaction, which may be important for understanding students' emotional needs and providing support.
4. **Accessibility**: While AI-adaptive tests can be beneficial, measures need to be taken to ensure that all students have access to the necessary technology and that accommodations are made for individuals with special needs.

# Data Sourcing

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# Analytic Approach

## Target Variable

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## Nature of the problem

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## Good indicators

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