

# PRE-SERVICE MATHEMATICS TEACHERS' CONCEPT IMAGES OF $\pi$

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This study investigates pre-service mathematics teachers' understanding of  $\pi$ . There is little research on how teachers or pre-service teachers conceptualise  $\pi$ . In his study, Fi (2003) found that pre-service mathematics teachers considered  $\pi$  as the unit for the radian measure. Akkoç's (2008) findings indicate that pre-service teachers' lack of understanding of the radian concept resulted in difficulties with making sense of  $\pi$  which requires to discover that there are approximately 6.28 ( $2 \times 3.14$ ) radians in a round angle.

This paper explores pre-service teachers' concept images of  $\pi$ . Tall & Vinner (1981) define concept image as 'the total cognitive structure that is associated with the concept' (p. 152). To investigate the concept images of  $\pi$ , the following question was asked to forty-eight pre-service teachers: "Are there two different  $\pi$ 's in mathematics?. Explain your answer".

To reveal participants' concept images of  $\pi$ , their written explanations were analysed. Out of forty-eight participants, twenty-three of them mentioned that there are two different  $\pi$ 's while twenty-four participants considered a unique  $\pi$  in mathematics. One participant did not respond to the question. Among those who considered two different  $\pi$ 's, twenty-one of them distinguished the number  $\pi$  (which is approximately 3.14) from the angle  $\pi$  which is equivalent to  $180^\circ$ . Even the twenty-four pre-service teachers who considered a unique  $\pi$  made similar explanations.

## References

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