

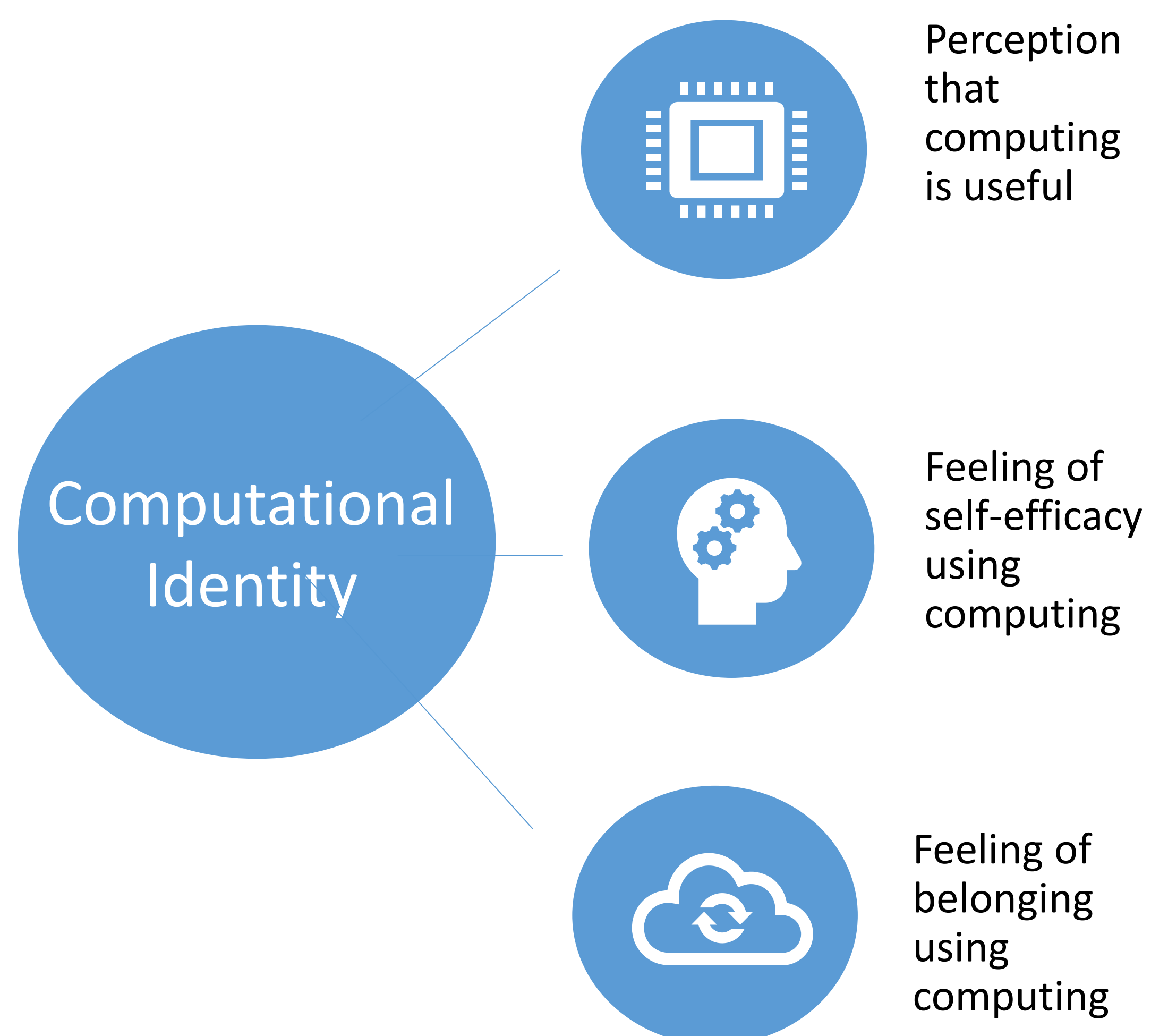
The Role of Blocks Programming in Forming Computational Identity

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Introduction

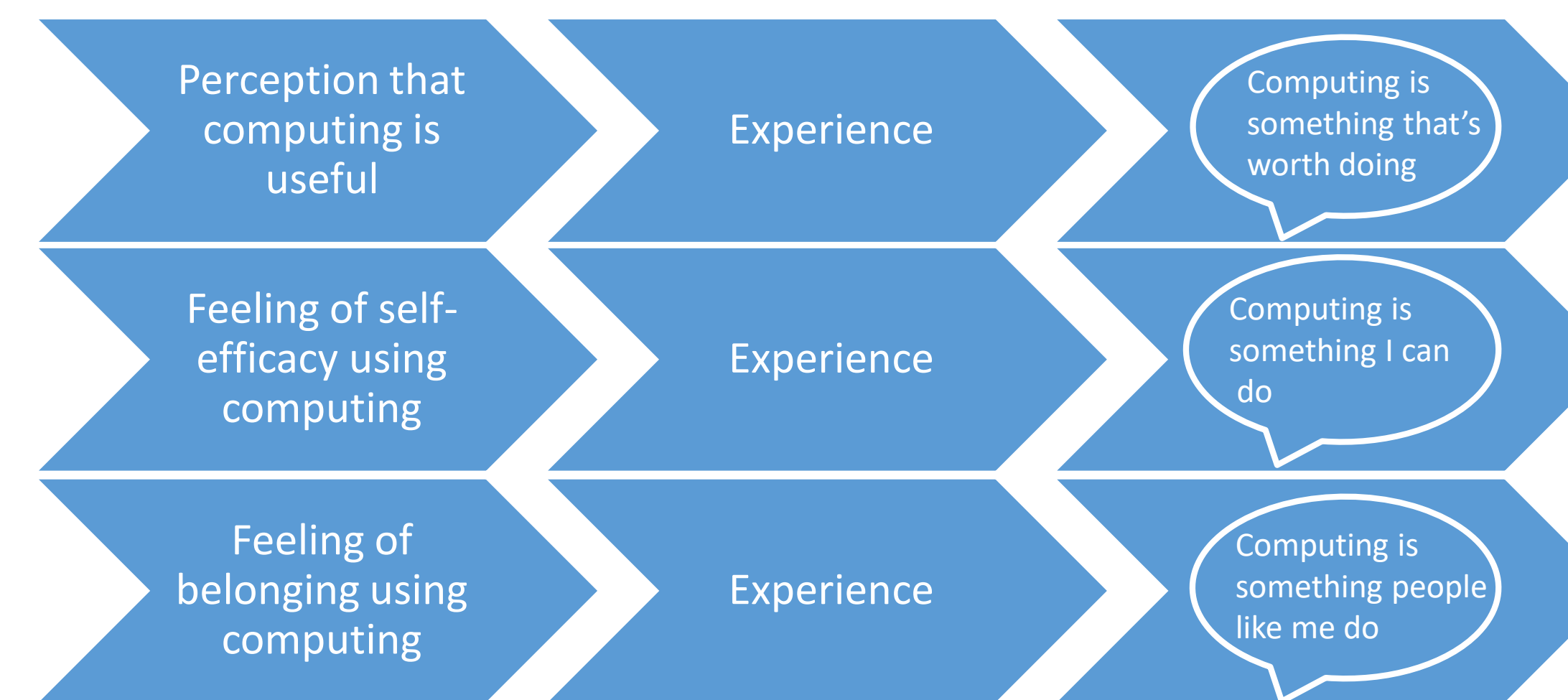
My research is on the concept of Computational Identity (CI), and the role of blocks programming in the formation of it. The research investigates what computational identity is, why it is significant, and if blocks contribute to it. I define computational identity to have three components:



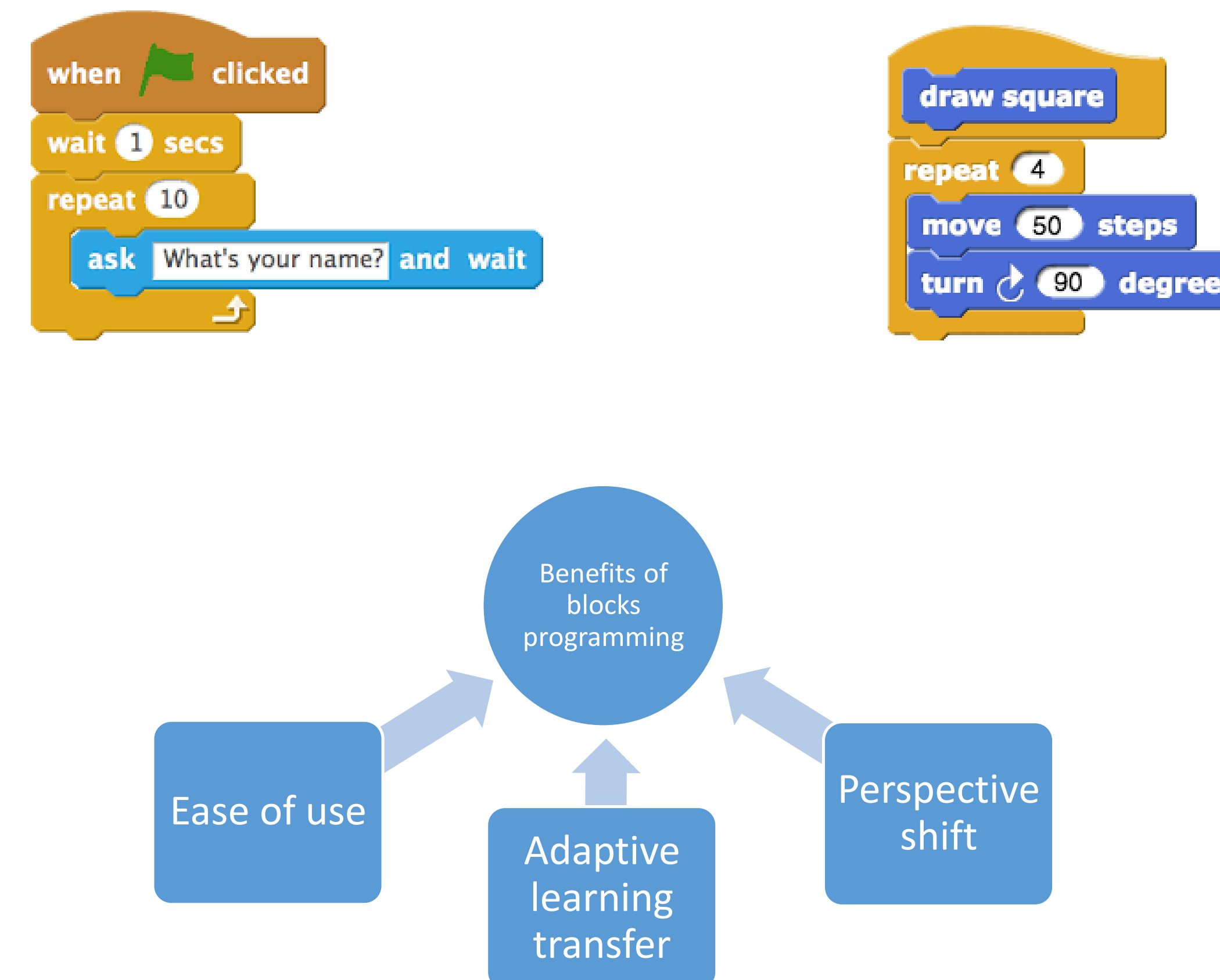
Context and Background

Computational identity is emerging as an important feature to study when considering how to motivate students to continue engaging with computation. It is not necessarily fostered by learning computing skills, and requires explicit consideration in instructional design. There has been limited prior research done on computational identity, and none on the role of blocks programming in forming CI.

Change in Computational Identity with Increased Experience



Blocks Programming



Methods

To explore this, I first found literature on concepts related to the components of my definition, and applied previous research to show how increased identifications with those components has led to increased retention in computing. I also found studies on the well-tested benefits of blocks programming whose findings may demonstrate the importance and effectiveness of blocks programming in the development of CI.

Results

The adaptive learning transfer of blocks to text, I believe, would increase CI as the student would feel more confident in their ability to use computing. The reported ease of use (in comparison to text-based language) of blocks could allow for a student to feel like they belong using computing, whereas a difficult beginning may discourage them. Blocks-based environment provide a fun and empowering introduction to computing, which often shift a user's view of themselves as someone who can do computing, whereas text-based beginnings can be more difficult and less empowering. This helps the user to develop feelings of confidence and belonging. The necessity of feeling like computing is useful, feeling confident, and feeling like a member of the community has been shown to be important in keeping/increasing student interest in computing and in retaining students in computing programs. I suggest that blocks programming is an important and effective tool in developing a student's CI. My findings overall support the hypothesis that blocks programming is an important and effective tool in developing a student's CI.

Further Applications

I am applying the results of this research to a survey intending to measure CI of students taking an introductory computing course, to be used Fall 2020. The work has opened up the area to new questions, such as what the effect of a strong, personally meaningful goal is in the development of CI and the impact of CI on students pursuing further education in computing.