Topic Bibliography

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1 Benefits of Learning to Code as a Child

The readings below address what children learn through coding activities and how it would affect on them in positive ways.

- [20, 124, 101, 103, 47]

2 Computational Kits and Toys for Young Children

The next readings present emerging computational kits that enable children to explore computing ideas and practicies. Yu and Hamilton focus on kits for young children (ages 7 years old and under). They present frameworks to categorize computational toys. Yu examines physical, virtual, and hybrid kids across three different perspectives: how they are designed, how they support children to explore computational concepts and practices, and how they enable children to engage in a range of projects and activities. Hamilton examines physical and ideational features.

- [133, 132, 35, 67, 126]

The following readings show different types of toys and kits that introduce programming to children of preschool and pre-primary school age. Some of them are screen-based, while others are non screen-based. Applications are varying from solving a simple maze to designing for games or animations.

- [57, 83, 27, 6, 61, 114, 69, 87, 71]

These readings introduce computational kits that enable tangible programming.

- [65, 37, 30, 134, 31, 22, 121, 117, 26, 106, 11, 105, 44, 40, 68, 49, 129, 60, 52, 75, 97, 59, 98, 120, 119, 77, 64, 118, 16, 39, 48, 66, 95, 135, 50, 113, 111, 70, 15, 125, 116, 96, 94, 99]

3 Technology Design for Children

The readings in this section is for design consideration.

3.1 Constructionism

These readings introduce constructionism learning theory and how children can learn math or computational thinking with this approach.

- [73, 1, 63, 72, 28, 21, 122, 7]

3.2 Developmental Theory

The readings below suggest frameworks for designing developmentally appropriate technology for children. Bers introduces the Positive Development Framework that proposes six positive behaviors (six C's) that should be supported by educational programs that use new educational technologies. Other frameworks propose motivation, social-interaction, and tinkebility aspects.

- [9, 18, 110, 128, 54, 84, 8, 88, 85]

3.3 Gender Differences in Learning to Code

The next readings point out how girls and boys' learning experiences and outcomes can be different and suggest how to make effective computational kits for both of them, or especially girls.

- [26, 5, 92, 100, 62, 12, 108, 107, 104, 102]

3.4 Interest-based Learning

These readings are about how interest-based learning or project-based learning can make learning meaningful and help children engaged in learning activities.

- [26, 5, 17, 92, 56, 115, 51]

3.5 Tangible Interface and Learning

The readings below show that tangible interface is more suitable for children by comparing with graphical interface in engagement and learning.

- [36, 125, 33, 58, 38, 39, 4, 5, 131, 130, 90, 91, 136, 109, 35, 127, 93]

3.6 Storytelling

The next readings address the power of storytelling and offer examples that use storytelling to motivate programming.

- [74, 7, 29, 70, 99]

3.7 Video-sensing in Education

The following readings present engaging and immersive learning experiences using video-sensing: augmented-reality, mixed-reality, virtual-physical interactivity, and real-time interaction.

- [42, 45, 43, 76, 41, 46, 23, 123, 86, 29]

4 Evaluation of Computational Kits

4.1 Usability Testing with Children

The readings below seek to find proper ways to measure usability with children.

- [24, 25, 34, 78, 89, 2]

4.2 Computational Thinking Measurement with Children

These readings propose frameworks and CT measurement tools for children such as a graphical survey or code schemes for analyzing behaviors or utterances.

- [13, 3, 33, 112, 81, 80, 79, 55, 53, 32, 14, 10, 19]

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