Use Arduino and Micro:bit as teaching platform for the education programming and electronics on the STEM basis

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Topics of my presentation

• Presentation of our textbooks
• Two parts of our textbook
• Arduino
• Micro:bit
• Structure of the textbooks
• Using of the textbooks
• Feedback
• Conclusion

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Presentation of our textbooks

- We presented it in the last Inforino firstly
- Part of the project PRIM (Podpora rozvíjení informatického myšlení – Support of evolution of the informatics thinking)
- Originally only the Arduino textbook
- Lately the second part Micro:bit
- It is divided into two separates parts now

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Arduino part of the textbook

• Presented on the last Inforino
• Detected two main types of problems
• At technical school
  • No problems with circuit
  • Problems with programming
• At other grammar schools
  • No problems with programming
  • Asking for the understanding of the circuits
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Arduino
• Starting discussion about solution of this problems
• We decided to use platform with Python support and simple circuits
• Two possibilities
• Esp8266 (Nodemcu)
• Micro:bit
• We choose Micro:bit – includes lot of peripheries itself
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Micro:bit
Structure of the books

- Text is divided into 10 (Arduino) and 6 (Micro:bit) main chapters
- Every chapter has four or five parts:
  1. For teacher – guide of lesson, presentations, whole text
  2. For students – guide for the lesson
  3. Self-study – summary of the basic theory
  4. Source code of all examples
  5. Other – schemes, pictures, videos, 3d parts
Structure of chapters

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Micro:bit book

• Initially planned same structure a Arduino Book – impossible – different hardware
• Then we planned as book without circuits – impossible – connect sound hardware
• Last we added chapter with circuits – RGB diode and thermometer
Feedback for Micro:bit

• It is not necessary to teach Python before study this book
• Suppose for the high school – 15 years old students and above
• Good overlaps with other subjects – Mathematics, Physics, English, Music, Arts and Geography
• Both textbooks is possible count as the STEM matherials
Conclusion

- Both textbooks Arduino and Micro:bit are ready to use
- It is possible to start teaching in the school year 2020-21
- The feedback is positive, but it is not sure whether books will be used widely in the curriculum of IT teaching
- It is only Czech version now, but in case of need we are ready to translate it to the different language.
Thank you for attention!

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