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Jumping into Browser-Based Python: An Exploratory Case Study on Student Perceptions

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For the first time since its inception, in October 2021 the Python programming language topped the TIOBE index as the most popular language and was named the "most wanted" language in Stack Overflow's developer survey (Jansen 2021; "Stack Overflow Developer Survey" 2021). Python's ease of use and simple syntax has made it not only one of the most popular languages for development, but also one of the most popular languages for teaching (Sayeth-Saabith et al. 2019; Srinath 2017). Many higher education institutions are switching to Python for introductory courses, following the lead of top schools such as Carnegie Mellon, MIT, Stanford, and UC Berkely (Frydenberg and Mentzer 2020; Guo 2017). This exploratory case study examines the experience of converting an introductory course from a no-code platform to a Python platform, and the resulting student perceptions of jumping into a browser-based development environment to learn Python programming. Example curriculum, such as assignment instructions and rubrics, will be included to serve as curricular supports for faculty seeking to employ browser-based Python in their own courses. This exploratory study is a prelude to implementing a larger-scale investigation of student perceptions of Python. A qualitative approach using a survey instrument with open-ended questions will be used to gather students' perceptions. The data will then be analyzed using a thematic coding approach. Computer textual analysis software will be used to assist in systematic coding. The results of this study will be used to refine the course curriculum and survey instrument prior to the larger study. Due to the skyrocketing popularity of Python, this significant study takes place at a critical time to share the experience of jumping into a browser-based Python environment with other faculty. The broad impact of this study is to serve as a proof-of-concept and starting point for other faculty interested in developing Python course curriculum using browser-based tools.

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