

Contents

3D Printing in Mathematics Education—A Brief Introduction	1
Frederik Dilling, Felicitas Pielsticker and Ingo Witzke	
3D Transformations for Architectural Models as a Tool for Mathematical Learning	17
Shereen El Bedewy, Ben Haas, Zsolt Lavicza and Tony Houghton	
Increasing the Skills on Occupationally Relevant Digital Technologies Among Students in Southern Denmark and Northern Germany: 3D Printing as a Learning Context in Regular Mathematics Classes	51
Mira H. Wulff, Marc Wilken and Aiso Heinze	
Vignettes of Research on the Promise of Mathematical Making in Teacher Preparation	73
Greenstein Steven, Akuom Denish, Pomponio Erin, Fernández Eileen, Davidson Jessica, Jeannotte Doris and York Toni	
Plane Tessellation	111
Rudolf Hrach	
The Platonic Solids as Edge-Models	133
Rudolf Hrach	
Doing Mathematics with 3D Pens: Five Years of Research on 3D Printing Integration in Mathematics Classrooms	143
Oi-Lam Ng and Huiyan Ye	
Possibilities for STEAM Teachers Using 3D Modelling and 3D Printing	163
Eva Ulbrich, Branko Andjic and Zsolt Lavicza	

“I Cannot Simply Insert Any Number There. That Does not Work” — A Case Study on the Insertion Aspect of Variables	187
Jenny Knöppel and Felicitas Pielsticker	
Coding in the Context of 3D Printing	207
Frederik Dilling, Gregor Milicic and Amelie Vogler	
Modelling and 3D-Printing Architectural Models—a Way to Develop STEAM Projects for Mathematics Classrooms.	229
Mathías Tejera Cardozo, Gustavo Aguilar and Zsolt Lavicza	
Interfaces in Learning Mathematics—Challenging and Encouraging Visualizations Switching from 3D to 2D and 2D to 3D	251
Felicitas Pielsticker and Gero Stoffels	
Mathematical Drawing Instruments and 3D Printing—(Re)designing and Using Pantographs and Integrals in the Classroom	275
Frederik Dilling and Amelie Vogler	
3D-Printing in Calculus Education—Concrete Ideas for the Hands-On Learning of Derivatives and Integrals	291
Frederik Dilling	
Maistaeder—on the Evolution of a Versatile Polyhedron	309
Robert Päßler	