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Becoming Teacher Researchers: Using 3D Printing to Create Individualized Assistive Technology for High School Students with Disabilities

Joseph T. Fritz
Boise State University

Maggie Dillon
Boise State University

Kierstyn Heilbrun
Boise State University

Lisa Beymer
Boise State University

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Abstract

Our team of undergraduate teacher-researchers collaborated with interdisciplinary peers to design 3D printed individualized Assistive Technology (AT) supports for high school students with significant disabilities. Our mission was to increase student access to their educational environment while also improving ourselves as future teachers, researchers, and advocates. A self-study was conducted with a primary purpose of identifying themes in our research experiences, with a secondary purpose toward discovering themes in our reflection to guide similar interdisciplinary projects in the future. Qualitative data was collected from research journals and focus group interviews. Data was then analyzed for common themes that represented trends in our experiences of becoming researchers, and the impact this project had on our development as future teachers. We discovered that common themes of extrinsic vs. intrinsic motivation were consistently present across the data set, yet evolved over time. We consistently agreed on extrinsic benefits of the project, e.g. professional opportunity, hands-on experience, building professional relationships. We also agreed upon intrinsic benefits of the project, e.g. meaningful relationships with students and peers, supporting student needs, professional development. This experience also solidified our desire to advocate for people with differing needs in our personal and professional lives.

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BOISE STATE UNIVERSITY

Maggie Dillon, Joseph Fritz, and Kierstyn Heilbrun

Becoming Teacher Researchers

Our Task

Increase student access while also improving ourselves as future teachers, researchers, and advocates.

Our Mission

Research and design individualized and customized assistive technology to meet the needs of three individual students within our community.

Motivations

- Execution of a meaningful product
- Successful implementation of assistive device
- Personal connections with students and University faculty
- Desire to meaningfully meet the individual student's needs
- Relationships among team members
- Shared value for one another's success within the project
- Desire to reflect on our development as future teachers
- Excitement to share our work and inspire others
- Passion for advocating for students with disabilities
- Advocating for the process of undergraduate research



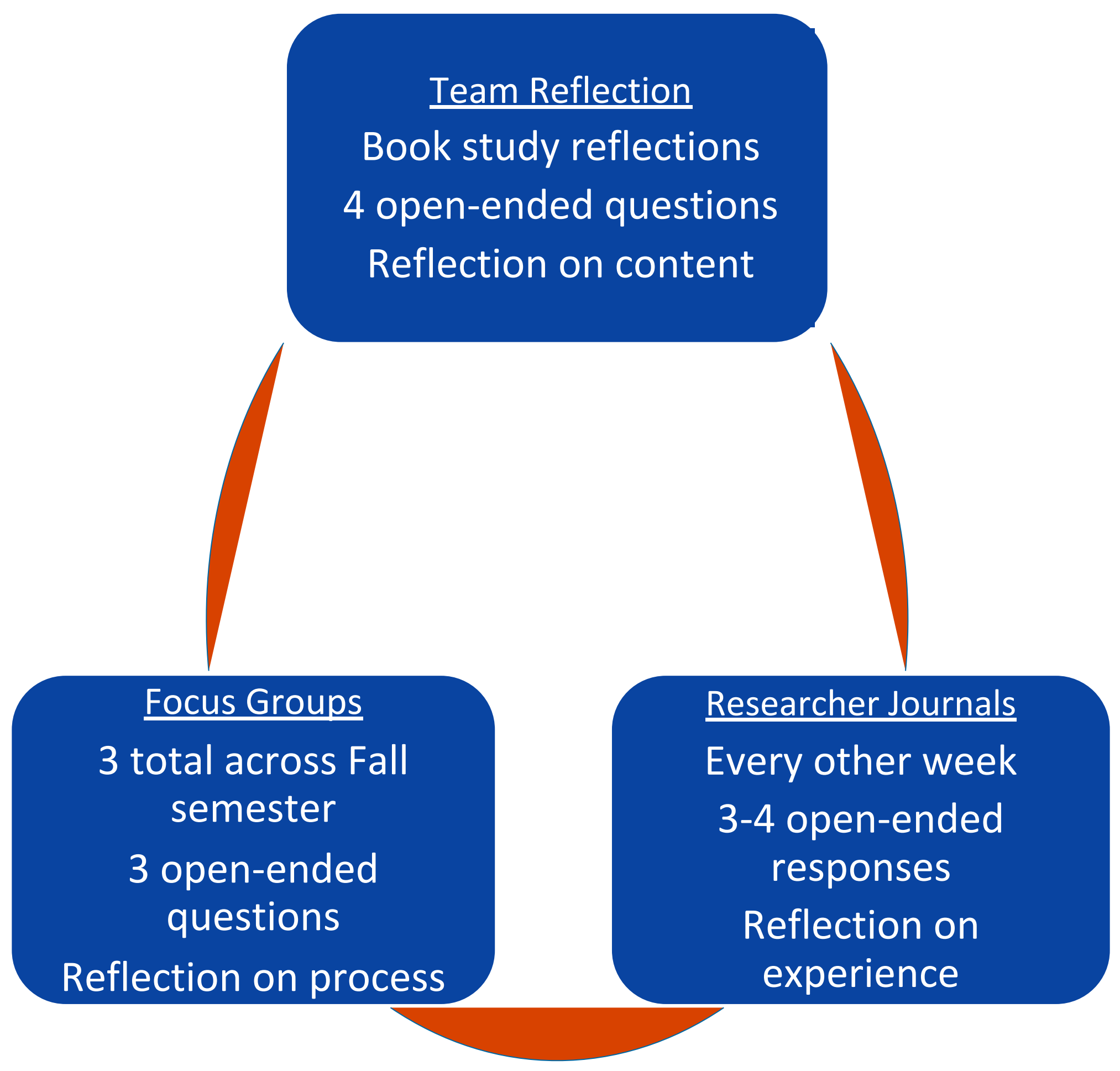
Limitations

- Other responsibilities, obligations, and time management
- Inexperience with 3D printing and design
- Lack of diversity in research team
- Misalignment between hopes for the project and reality of project

Conclusions

- Realized that there are misconceptions about educational research and students with disabilities
- Ethical, productive, and meaningful research and intervention is extremely important
- Professional development in the area of emerging technologies as they relate to student needs is essential

Methodology



Evolution of Themes

- Exciting Professional opportunity
- Meaningful devices and relationships
- Internalized desire to advocate and continue researching

Benefits as Future Teachers

- Grew communication and professional skills
- Experienced gathering and coding data
- Gained confidence utilizing research in driving research and intervention design
- Built resources and community through collaboration and networking
- Had the opportunity to advocate for students with disabilities and create awareness of resources to meet their needs

