

Navigating Independence: What Works to Teach Campus Navigation

By Mindy Lingo, Belkis Choiseul-Praslin, Clare Papay, Chelsea VanHorn Stinnett, and L. Danielle Roberts-Dahm

Introduction

Starting college can be an exciting time for students. College can also present new challenges, like learning unwritten rules, following unfamiliar procedures, and navigating new environments. Many students, including those with intellectual disability, benefit from explicit campus navigation and acclimation training in their new campus community. This kind of training can help prepare students for campus and community involvement. Learning campus navigation skills can benefit incoming college students, and can generalize to other new environments, resulting in increased independent community access.

As part of the Think College Inclusive Higher Education Network's focus on disseminating research and best practices related to improving higher education for students with intellectual disability, we reviewed existing peer-reviewed research and found a number of studies that focused on teaching campus navigation. Peer-reviewed research provides useful information for program staff to understand the specific conditions under which navigation teaching strategies may be beneficial. Peer-reviewed research can also offer guidance on how to implement these strategies. Using peer-reviewed research to guide the selection of navigational tools can reduce the risk of implementing unproven or ineffective tools. This Insight Brief summarizes the research findings and gives recommendations for how to use research-based approaches to teach campus navigation.

Many students, including those with intellectual disability, benefit from explicit campus navigation and acclimation training in their new campus community.

This Insight Brief summarizes the research findings and gives recommendations for how to use research-based approaches to teach campus navigation.

Summary of Research

Richter and Uphold (2020) conducted a comprehensive literature review of how higher education programs are successfully teaching students with intellectual disability to navigate their college campuses. This review yielded seven US peer-reviewed studies that improved participants' navigation skills. All seven studies used single case research designs, which included some form of a handheld technology intervention that demonstrated improved navigation skills for students with intellectual disability in campus settings. Participants were students who took part in educational opportunities on a college campus, and each intervention focused on enhancing navigation skills for students with intellectual disability. Table 1 summarizes these studies, including basic information on each study, the skills assessed, and key findings.

In addition to the findings from the Richter and Uphold (2020) literature review, a study by Kearney et al. (2021) published after the literature review confirmed similar findings to support the use of a task analysis to teach students with intellectual disability to use Google Maps to improve campus navigation. This study included the use of peer mediation to teach the needed skills through modeling and individual instruction. The three participants demonstrated high rates of accuracy in navigating campus through all phases of the single-case study.

TABLE 1. STUDY FINDINGS FROM RICHTER AND UPHOLD (2020) LITERATURE REVIEW

Reference	Basic Information	Skill(s) Assessed	Key Findings
Kelley et al. (2013)	Used picture prompting on a video iPod to teach four students to navigate a college campus	Selecting and completing the correct route independently, using pictures displayed on the iPod Navigating to and from each landmark independently, using pictures displayed on the iPod	All participants effectively learned three different routes to navigate campus. Three participants were able to navigate new, untrained routes using the intervention.
McMahon, Cihak, et al. (2015)	Used three different navigation aids (an augmented reality app, Google Maps, and a paper map) to teach four students to navigate a city independently	Independently indicating the correct direction to move when asked by the investigator, “which direction do we go at this point?”	The augmented reality app was most effective in teaching participants to navigate independently. While the Google Maps navigation had variable results to aid navigation, the paper maps had weak to no results.
McMahon, Smith, et al. (2015)	Compared augmented reality navigation to Google Maps and paper maps as an effective tool for four participants navigating the community setting surrounding the college	Independently indicating the correct direction to move to reach the desired location	All participants were able to navigate independently using the augmented reality device. Participants needed prompting when using Google Maps and paper maps.
Mechling & Seid (2011)	Used a personal digital assistant device with picture, auditory, and video prompts to facilitate independent navigation for three students	Independently reaching the correct landmarks and final destinations using the personal digital assistant device	All participants were able to independently navigate to their destinations using the self-prompting features on the personal digital assistant device.
Price et al. (2018)	Used Google Maps to navigate public transportation for independent travel for four students on and off campus	Independently and correctly using Google Maps to take the bus from a starting location to an assigned destination	All participants increased their navigation skills. Three of the four participants learned to use Google Maps independently to navigate public transportation.
Smith et al. (2017)	Used a navigation app on a mobile phone to improve campus navigation skills with three students	Independently and correctly making waypoint (or turn-by-turn) decisions using the navigation app on their cell phone when traveling to a new location on campus	All participants increased their navigation skills using mobile technology.
Yuan et al. (2019)	Used the Google Maps mobile app to help three students plan routes and reach their destinations	Independently planning a route using Google Maps Independently reaching the destination using their planned routes on Google Maps	Two of the participants were able to independently complete all steps in route planning using Google Maps and demonstrated the ability to successfully navigate to the location. The remaining participant needed cue cards and targeted feedback to complete the steps to plan the route in Google Maps and verbal prompts to navigate to the designated locations.

How to Use Research to Improve Practice

The authors of the research studies made the following recommendations:

#1

Select navigational tools and design interventions to meet the needs of the student(s).

- Consider the prerequisite technology skills and fine motor skills of students when selecting appropriate navigation tools.
- Be mindful of outside variables that might impact students' use, like weather conditions and safety risks of using handheld devices while walking.

#2

Consider learners' preferences and stay up to date on what tools are available.

- Students' preferences should guide the process of selecting navigational tools.
- Technology is always changing. Stay up to date on what is available and consult with assistive technology experts to identify tools to help maximize independence for students with intellectual disability.

#3

Consider the advantages and limitations of available navigational tools and how they are used.

- The use of commercially available navigation tools can be cost efficient and easy to learn.
- If needed, a program could use a commercially available tool in addition to a task analysis.
- Use peer trainers to support the teaching of navigation.

In addition to these recommendations, we suggest the following:

- Evaluate students' support needs for using navigational tools by conducting a task analysis of the required skills and steps. This analysis can take place during campus visits, orientation, or the interview process before the program begins.
- While teaching the use of navigational tools, students may need prompting during the beginning stages but prompting and instructor proximity should be reduced as the students gain the needed skills to encourage independence.
- Provide ample opportunities to teach navigational skills in a variety of natural community settings to encourage the generalization of the behaviors across other environments.
- Send accessible information (e.g., paper copies, videos, PowerPoints) to newly admitted students and families about possible navigational tools before they begin the program to allow time to

learn and practice. Some ways to enhance this information include:

- » Providing fun lessons to encourage learning the navigational tool before starting the program
 - » Creating online group scavenger hunts in the summer to help new students learn how to use the navigational tools and to give returning students a refresher course
 - » Facilitating a webinar for students and families so they can learn more about navigating their new campus and community, and how these tools may assist them
- Individualize the support you're providing students using navigational tools. Some students may need additional support (e.g., screen readers, enlarged text) in using navigational tools.
 - When appropriate, use campus navigation resources that the college or university already offers.
 - Take advantage of faculty and staff who have expertise in this area and consult professionals from other campus departments or areas of study to see how they could support these efforts.
 - Check out resources available for people without disabilities or other disability types that may meet the needs of students with intellectual disability.
 - Keep the navigational tools and training as inclusive as possible.
 - Have students participate in campus tours using their navigational tool to learn more about the campus.
 - Use a flexible navigational tool that works in multiple environments and ideally one that is available after students complete the program.

Conclusion

The research on teaching campus navigation to students with intellectual disability highlights several effective strategies, including the use of technology, task analysis, and peer support. These approaches have been shown to significantly improve students' ability to independently navigate their campus environments, enhancing both their confidence and participation in campus life. This brief included several recommendations to translate these findings into practice. Ongoing professional development for program staff and peer mentors or coaches should emphasize the importance of individualized support and assistive technology. By leveraging research-based strategies, higher education programs for students with intellectual disability can create more inclusive, supportive environments that build student independence.

These approaches have been shown to significantly improve students' ability to independently navigate their campus environments, enhancing both their confidence and participation in campus life.

Where to Find More Information

[Technology and UDL: Using Google My Maps for Student Supports.](#) This recorded presentation shares an overview of Google My Maps and describes how to create and customize maps to help students with intellectual disability navigate their campus and beyond.

[Research-Based Technology in Inclusive Higher Education.](#) This article highlights technology tools that have been used in peer-reviewed research studies to improve or enhance the college experience for students with intellectual disability.

[Preparing for College Resources.](#) This page lists resources and information on what students can and should do, with the support of their family and teachers, to get ready for the transition from high school to college.

REFERENCES

- Kearney, K. B., Joseph, B., Finnegan, L., & Wood, J. (2021). Using a peer-mediated instructional package to teach college students with intellectual and developmental disabilities to navigate an inclusive university campus. *The Journal of Special Education, 55*(1), 45–54. <https://doi.org/10.1177/0022466920937469>
- Kelley, K. R., Test, D. W., & Cooke, N. L. (2013). Effects of picture prompts delivered by a video iPod on pedestrian navigation. *Exceptional Children, 79*(4), 459–474. <https://doi.org/10.1177/001440291307900405>
- McMahon, D., Cihak, D. F., & Wright, R. (2015). Augmented reality as a navigation tool to employment opportunities for postsecondary education students with intellectual disabilities and autism. *Journal of Research on Technology in Education, 47*(3), 157–172. <https://doi.org/10.1080/15391523.2015.1047698>
- Mahon, D., Smith, C., Cihak, D. F., Wright, R., & Gibbons, M. M. (2015). Effects of digital navigation aids on adults with intellectual disabilities: Comparison of paper map, Google Maps, and augmented reality. *Journal of Special Education Technology, 30*(3), 157–165. <https://doi.org/10.1177/0162643415618927>
- Mechling, L. & Seid, N. (2011). Use of a hand-held personal digital assistant (PDA) to self-prompt pedestrian travel by young adults with moderate intellectual disabilities. *Education and Training in Autism and Developmental Disabilities, 46*(2), 220–237. <https://www.jstor.org/stable/23879693>
- Price, R., Marsh, A. J., & Fisher, M. H. (2018). Teaching young adults with intellectual and developmental disabilities community-based navigation skills to take public transportation. *Behavior Analysis Practice, 11*, 46–50. <https://doi.org/10.1007/s40617-017-0202-z>
- Richter, S., & Uphold, N. (2020). Comprehensive review of the literature to teach campus navigation to young adults with intellectual and developmental disabilities. *Journal of Inclusive Postsecondary Education, 2*(1). <https://doi.org/10.13021/jipe.2020.2468>
- Smith, C., Cihak, D. F., Kim, B., McMahon, D. D., & Wright, R. (2017). Examining augmented reality to improve navigation skills in postsecondary students with intellectual disability. *Journal of Special Education Technology, 32*(1), 3–11. <https://doi.org/10.1177/0162643416681159>
- Yuan, C., Balint-Langel, K., & Hua, Y. (2019). Effects of constant time delay on route planning using Google Maps for young adults with intellectual and developmental disabilities. *Education and Training in Autism and Developmental Disabilities, 54*(3), 215–224. <https://www.jstor.org/stable/26780622>

ABOUT THE AUTHORS

MINDY LINGO is a Training Developer for the Think College Inclusive Higher Education Network at the Institute for Community Inclusion, UMass Boston.

BELKIS CHOISEUL-PRASLIN is a Research Associate at the Institute for Community Inclusion, UMass Boston.

CLARE PAPAY is a Senior Research Associate at the Institute for Community Inclusion, UMass Boston.

CHELSEA VANHORN STINNETT is the Training and Technical Assistance Coordinator for the Think College Inclusive Higher Education Network at the Institute for Community Inclusion, UMass Boston.

L. DANIELLE ROBERTS-DAHM is a Project Coordinator for the Think College Inclusive Higher Education Network at the Institute for Community Inclusion, UMass Boston.

INSIGHT, Issue No. 64, 2024

This is a publication of the Think College Inclusive Higher Education Network at the Institute for Community Inclusion, University of Massachusetts Boston, funded by the Office of Postsecondary Education (Grant No. P407C210001). The opinions contained in this document are those of the grantee and do not necessarily reflect those of the funders.

Recommended citation: Lingo, M., Choiseul-Praslin, B., Papay, C., Stinnett, C.V., & Roberts-Dahm, L.D. (2024). Navigating independence: What works to teach campus navigation. Think College Insight Brief, Issue No. 64. Boston, MA: Institute for Community Inclusion, University of Massachusetts Boston.

