UF IFAS Extension UNIVERSITY of FLORIDA

AEC600

Teaching Students with Disabilities: Orthopedic Impairment[1]

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Introduction

Agricultural education instructors teach a wide variety of students including those who may be disabled. Students requiring special services are not always cognitively impaired. Sometimes students may require modifications based on their physical abilities, particularly those classified with an orthopedic impairment. According to the Individuals with Disabilities Education Act, an orthopedic impairment is defined as

> A severe orthopedic impairment that adversely affects a child's educational performance. The term includes impairments caused by a congenital anomaly, impairments caused by disease (e.g., poliomyelitis, bone tuberculosis), and impairments from other causes (e.g., cerebral palsy, amputations, and fractures or burns that cause contractures). (2004, 300.8.8)

Orthopedic impairments can be classified as belonging to one of three different categories: neuromotor impairments, degenerative diseases, or musculoskeletal disorders (Heller & Swinehart-Jones, 2003). Common examples of conditions according to each category include the following:

Neuromotor Impairments: spina bifida, cerebral palsy, spinal cord injuries

Degenerative Diseases: muscular dystrophy, spinal muscular atrophy

Musculoskeletal Disorders: club foot, missing/deformed limbs, scoliosis

The orthopedic impairment must interfere with the student's ability to perform in an educational environment in order to qualify for special services. This disability may interfere with a student's ability to walk, write, or perform other physical tasks in the classroom and laboratory setting. It might also affect the student's ability to communicate with others, hindering their ability to respond to questions orally. Furthermore, they might also have additional disabilities that can affect their educational performance, including mental retardation, learning disabilities, perceptual problems, distractibility, disorganization, visual-motor deficits, restlessness, and visual abnormalities (Heller & Swinehart-Jones, 2003). These various conditions all serve to affect the student's coordination and mobility as well as their ability to communicate, learn, and adjust (Vaughn, Bos, & Schumm, 2007). Orthopedic impairments may also affect the student's endurance in performing various tasks, and they might tire more easily. Due to the hands-on nature of agricultural education, instructors should plan ahead to meet the needs of learners in their classes with orthopedic impairments.

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Application in the Learning Environment

Just as each student who is cognitively affected by a learning disability varies in the range and depth of their disability, students with orthopedic impairments vary widely as well. Some of the more common orthopedic impairments include cerebral palsy, muscular dystrophy, spinal cord injury, and spina bifida (Vaughn, Bos, & Schumm, 2007). The instructor needs to meet with the case manager of the student and with the parents/guardians of the student in order to best prepare for meeting the needs of the student. Students with orthopedic impairments will likely have a variety of needs influenced by the type of limitations they experience with their disability. Heller and Swinehart-Jones (2003) developed the following model which depicts the impact of orthopedic impairments on educational performance.

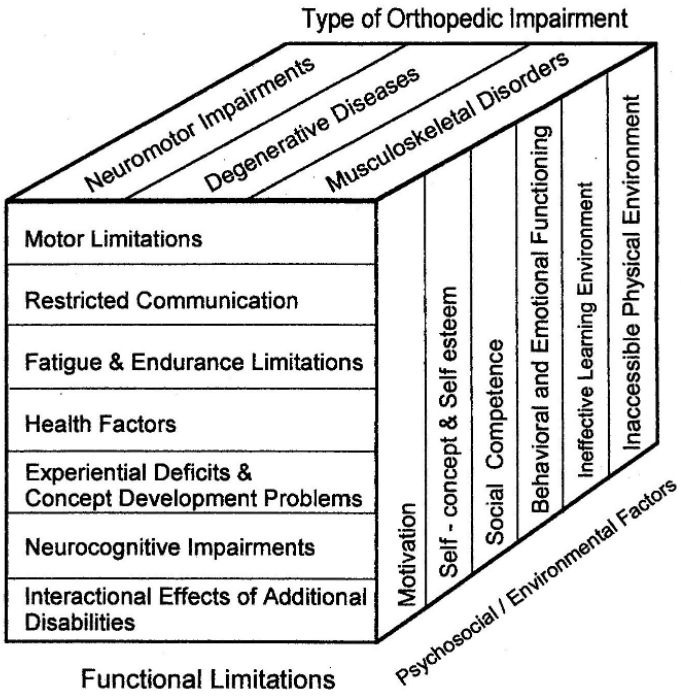

Figure 1. A model depicting the impact of orthopedic impairments on education performance.
Credits: Heller and Swinehart-Jones (2003, p. 7)

The model illustrates how the type of orthopedic impairment, as well as the psychosocial and environmental factors, all can affect the functional limitations of the educational performance of students with orthopedic impairments. Furthermore, the instructor should determine how the functional limitations of the student affect the amount of instructional delivery time. Motor limitations and neurocognitive impairments may increase the amount of time necessary to provide students with meaningful learning experiences, requiring the instructor to modify the time management of their classroom.

Consideration should be given to the psychosocial/environmental factors when tailoring instruction to students with orthopedic impairments. Instructors can use three basic principles when accommodating students with orthopedic impairments: (1) use others as resources, (2) be flexible in your planning, and (3) be ingenious and creative. Students with orthopedic impairments often have a large support team assigned to work with them to ensure that they are receiving appropriate educational services. For example, students might be given assistance from special education teachers, an occupational or physical therapist, or a speech and language pathologist. If the severity of the impairment is far less or temporary, the assistance may be from an adaptive physical education teacher (Vaughn, Bos, & Schumm, 2007). Involve the various members of this support team to gain clearer idea of what educational strategies will be appropriate for the student. The instructor should also be made aware of specific indicators of student health problems and have the ability to respond appropriately should an emergency situation arise (Heller & Swinehart-Jones, 2003). The manner in which the instructor should respond to these situations will vary among school districts, so it will be imperative that the instructor seek out this information. Ultimately, it is the responsibility of the instructor to provide a safe and healthy environment for all students.

Classroom Environment

Students with orthopedic impairments may have assistive technologies that allow them to communicate, read, record notes, or physically move around the room. Conversing with the members of the student's support team, who are familiar with these technologies, can help the instructor learn how these technologies can be incorporated into instruction. Instructors should work closely with special education teachers in order to provide appropriate modifications to tests, quizzes, and other assignments. For example, a student might be better able to respond to questions orally rather than writing a response or using assistive technology, or the number of questions on a test might be reduced if the student tires easily. Structured graphic organizers, which limit the amount of visual processing or physical writing, may also be useful modifications for students with orthopedic impairments. Since these students might also be affected by mental retardation and learning disabilities that might affect their ability to learn, students with orthopedic impairments may have modified expectations for knowledge and skills they are expected to acquire (Heller & Swinehart-Jones, 2003). For example, a student

may be exempt from taking a class if it is determined that a particular subject might be too abstract for them to grasp. It would be wise for the agriculture instructor to meet with the special education teacher to determine unit content appropriate for the student's abilities.

In addition to determining appropriate instructional strategies and curricular expectations, it is vital that the instructor evaluate the physical classroom environment when planning to work with students with orthopedic impairments. Consideration should be given to seating (e.g., desk with attached chairs vs. tables), floor traction, lighting, board visibility, width of aisles, work surface accessibility, location of classroom supplies, and location of the student in the classroom. Creating a physical environment that allows a student to easily interact with their peers is the first step toward creating a welcoming, safe space for learning to occur.

Laboratory Environment

Student accessibility is likely to be the biggest concern for instructors planning to meet the needs of students with orthopedic impairments in the laboratory setting. Agricultural education laboratories vary widely and can include environments such as food science labs, chemistry labs, large animal handling facilities, small animal care and grooming labs, agricultural mechanics facilities, gardens, greenhouses, and more. Since these laboratory settings vary so widely, instructors will need to assess the physical layout of their own particular lab settings to determine what areas need to be addressed when instructing a student with orthopedic impairments. Agricultural-specific assistive technology is increasingly available from the National AgrAbility Project and may be available for school systems to implement into programs. The instructor should have conversations with the special education staff and possibly even the administration regarding the types of modifications that might be made to existing laboratory environments or equipment in order to make it accessible for students with orthopedic impairments. The instructor needs to explain the activities associated with working in the laboratory setting to the learner's case manager, paraprofessional, and parents before having the learner engage in such activities in order to decide which activities are appropriate and safe for the learner.

Non-Formal Environment

Agricultural education takes advantage of a variety of non-formal learning environments, including class field trips to area farms and businesses, FFA conferences and workshops, and Supervised Agricultural Experience projects (SAE). Students with orthopedic impairments will possibly have walkers, wheelchairs, or motorized equipment to help them move around independently; these will need to be accounted for when transporting students. Some agriculture education programs have activity vehicles such as pickup trucks, vans, or busses that are used to transport students. If an instructor is taking a class field trip, then it will be important to account for how students with orthopedic impairments will travel. The instructor may need to request a school bus with handicap accessibility to transport the student. The instructor should consult the special education department and the administration about the particular processed needed to ensure that students with orthopedic impairments can still participate in class or FFA field trips.

Students with orthopedic impairments may also have vocational goals written into their Individualized Education Plans (IEP) that expressly outline knowledge and skills that the students should develop in order to help prepare them for life after public education. The SAE requirements for students with orthopedic impairments can be modified to meet these goals and the student's ability. For example, a student might help sort mail and files at a veterinary office or stock produce at a grocery store. These students may also be assigned a workplace mentor by the special education department as part of addressing the vocational goals of the students' IEP. This mentor is frequently a paraprofessional the student may work with throughout the school day already, and who accompanies the student to their place of work. This person can give the instructor valuable feedback regarding the student's performance. Additionally, students with orthopedic impairments might conduct their own agriscience research project or entrepreneurship project at school or home in order to enrich their vocational skill development and augment their agricultural education.

Conclusion

Learners with orthopedic impairments are affected by their disability in unique ways and by a variety of conditions. In tandem with physical disabilities, these students might also be affected by other conditions such as developmental disorders, mental retardation, learning disabilities, or visual processing disabilities. Of primary difficulty for students with orthopedic impairments is the physical interaction with their environment. Agricultural education instructors should work closely with the special education department and other members of the support team for a student with orthopedic impairments to ensure that their instruction and instructional environments meet the needs of the learner. Resources for adaptive agricultural technology can be found from Extension or AgrAbility. Additionally, other

resources for instructional strategies or supplies designed for individuals with disabilities are available from various websites listed below.

https://pubs.ext.vt.edu/442/442-084/442-084_pdf.pdf

http://www.agrability.org/index.cfm

https://www.independentliving.com/default.asp

http://www.nsta.org/disabilities/motor.aspx

References

Heller, K.W., & Swinehart-Jones, D. (2003). Supporting the Educational Needs of Students with Orthopedic Impairments. *Physical Disabilities: Education and Related Services, 22(1), 3–24.*

Individuals with Disabilities Education Act of 2004 § 300, A § 300.8 c 8 (2004). Retrieved from http://idea.ed.gov/explore/view/p/,root,regs,300,A,300%252E8,c,8,

Vaughn, S., Bos, C.S., & Schumm, J.S. (2007). *Teaching Students Who Are Exceptional, Diverse, and at Risk in the General Education Classroom* (4th ed.). Boston, MA: Pearson Education.