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Evidence-based Practices for Individuals with Autism, Intellectual Disability, and Related Disabilities

Using Upside-Down Task Analysis to Monitor Student Progress



Taryn Wade



Addie McConomy



Jenny Root

Florida State University

Using Task Analysis

Supporting student learning and independence is one of the primary goals of special education. Task analysis is one versatile tool that can help students work towards this goal. A *task analysis* is an ordered list that includes all of the discrete skills that, when completed sequentially, make up a specific task (Moyer & Dardig, 1978). Task analysis has been extensively used in special education. Research completed by Gold (1976) laid the foundation for teaching chained tasks using task analysis to students with extensive support needs (e.g., autism, intellectual disability, multiple disabilities). Task analyses are meaningful tools for special education teachers because they can be easily differentiated, can be applied to many settings and tasks, and allow for frequent data collection. Task analytic instruction is an evidence-based practice for teaching students with developmental disabilities to complete chained tasks (Spooner et al., 2017). Task analysis can use words or visual supports to convey the steps (Cohen & Demchak, 2018) and can be developed for any skill that requires a series of steps to be carried out in a specific order, including daily living skills (e.g., brushing teeth, preparing a snack), community living skills (e.g., using a vending machine, using a debit card to pay for a purchase), and academic skills (e.g., engaging in story-based lessons, solving a math problem).

In addition to academic assistance, task analysis supports related skills that allow students more independence, such as

participation in routines within general education settings (Cohen & Demchak, 2018) and social activities with peers (Parker & Kamps, 2011). Teachers can also use task analysis to support self-monitoring, which can lead to greater independence (Gilley et al., 2020; Miller & Taber-Doughty, 2014; Root et al., 2020).

Connection to Writing IEP Goals

The data collected via task analysis can inform decision making in long-term goals, including IEP development and assessment of progress. Special educators are required to report student progress toward IEP goals on a frequent basis. Further, data-based decision making is a core tenant of special education (CEC, 2015). Using task analysis can reduce the amount of time teachers take to assess progress by integrating instruction and assessment. The result is authentic and valuable data that have been collected throughout an instructional unit. These data can be used to establish present levels of performance, plan long-term goals and short term objectives, and tailor instruction to student needs as they demonstrate they need more challenge or increased support.

Monitoring Student Progress with Task Analysis

The upside-down task analysis is conducive to data collection, and teachers can use its embedded graphing format to analyze data directly on the task analysis form (Test & Spooner, 1996). The steps are listed in reverse chronological order

Upside down task analysis: Steps to decompose a 3-digit number into place value														
10. Say number using numerals	/	/	/	/	/	10	10	10	10	10	10	10	10	
9. Say number using blocks	NR	SV	SV	SV	/	9	9	9	9	9	9	9	9	
8. Count and move units to place value mat	GP	SV	SV	SC	/	8	8	8	8	8	8	8	8	
7. Say last digit	/	/	/	/	/	7	7	7	7	7	7	7	7	
6. Count and move rods to place value mat	GP	GP	SC	SC	/	6	6	6	6	6	6	6	6	
5. Say second digit	/	/	/	SC	/	5	5	5	5	5	5	5	5	
4. Count and move flats to place value mat	GP	SV	SC	/	4	4	4	4	4	4	4	4	4	
3. Say first digit	SV	/	/	SV	/	3	3	3	3	3	3	3	3	
2. Confirm that number is in the hundreds	NR	NR	SV	SC	/	2	2	2	2	2	2	2	2	
1. State how many digits are in the number	SV	/	/	/	/	1	1	1	1	1	1	1	1	
Session number	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Annotation key: / - Independent correct SV - Specific verbal SC - Self correct GP - Gestural prompt NR - No response/teacher completed	Student mastery goal: Maxwell will complete 8 steps independently correct for three sequential sessions. Notes:													

Figure 1. Example of Upside-Down Task Analysis

Note: items completed independently correct are marked with a slash. The total number of steps completed independently correct in a session are circled.

(see Figure 1), so the first step is listed at the bottom of the task analysis. In addition to the written steps, columns with the step numbers can be placed on the form so that teachers are able to graph multiple sessions (for example, 5 columns to monitor one week of progress). The teacher can mark the steps the student completes correctly using an annotation key. This annotation system may be simpler (e.g., correct steps) or more complex and include prompt levels (e.g., steps completed independently, with a specific verbal prompt, with a gestural prompt, no response).

The number of steps the student completes correctly is circled for each session for immediate and frequent progress monitoring (Test & Spooner, 1996). The circled numbers can be connected with lines for visual analysis of student performance. Collecting and analyzing data at the step level provides specific information on student support needs (Kellems et al., 2020). For example, steps that consistently require prompting may need to be pulled out and practiced in a massed-trial format for repeated opportunities to respond with feedback (Test & Spooner, 1996). For in-depth resources on data-based decision making, see Jimenez et al. (2012) and Cox et al. (2020).

The data from the task analysis can be reported in several ways. For example, the teacher can report that the student completed 45% of task analysis steps independently and 55% of the steps required teacher verbal prompts. This information can be used to modify the task analysis, which scaffolds support for classroom learning.

Conclusion

Task analysis is a versatile tool that includes benefits to student learning, supports inclusive practices, and streamlines the data collection process for special educators. Developing the steps in the process is individualized based on student need, and using a permanent product, data can easily be graphed and data-based decisions can be made to scaffold the task analysis steps up or

down. Task analysis is an EBP for students with extensive support needs and should be incorporated into both academic and daily living instruction to support learning and independence. ■

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