Inclusion

Student Perspectives on Using the Self-Determined Learning Model of Instruction to Enhance Outcomes

--Manuscript Draft--

Abstract

Research shows that there is a close relationship between the promotion of self-determination

and positive school outcomes, including academic goal attainment outcomes in general education

classes. However, research is needed to investigate how students perceive the impacts of

evidence-based self-determination interventions, like the Self-Determined Learning Model of

Instruction (SDLMI), when delivered by their general education teachers. Interviews were

conducted with ten students with and without disabilities who received SDLMI instruction from

teachers in secondary general education classrooms. Qualitative content analysis was used to

understand students' experiences with the SDLMI and its impacts on their self-determination and

academic learning. Participants shared ways that the SDLMI positively impacted their self-

determination and academic learning outcomes. Students identified the impacts of providing

opportunities and supports for self-determined learning in their classrooms. They also identified

other factors that influence their self-determination and the use of the SDLMI for goal setting

and attainment. Implications for research and practice are discussed.

Keywords: self-determination, Self-Determined Learning Model of Instruction, academic

outcomes, intervention, inclusive education

Student Perspectives on Using the Self-Determined Learning Model of Instruction to Enhance Outcomes

A substantial body of research links enhanced self-determination to improved outcomes in school and beyond for secondary students with disabilities (Mazzotti et al., 2021; Rowe et al., 2021). However, the benefits of enhancing self-determination are relevant to all students with and without disabilities as they strive to become college and career ready. College and career readiness frameworks increasingly emphasize the importance of teaching non-academic skills, including self-regulated self-determination skills, for all students to be successful in school and afterward (Lombardi et al., 2018; Morningstar et al., 2017). Researchers have begun to focus on providing universal self-determination instruction (Tier 1) to support all students in general education classrooms (Raley et al., 2020; Shogren et al., 2016) through integrated support systems rooted in equity-based education (Artiles & Kozleski, 2016; Sailor et al., 2021). Despite emerging research suggesting the positive impacts of self-determination instruction on self-determination and academic goal attainment in inclusive secondary classes (Raley et al., 2020), little is known about students' perspectives of such instruction and its impact on their self-determination and academic learning as well as other factors that impact their use of self-determined learning.

Self-Determination

Casual Agency Theory provides an empirically validated framework to describe the development of self-determination across the life course (Shogren et al., 2015). Causal Agency Theory defines *self-determination* as "a dispositional characteristic manifested as acting as the causal agent in one's life" (Shogren et al., 2015, p. 258). Casual Agency Theory further defines three key self-determined actions: *volitional actions* (DECIDE; initiating setting goals based on

one's desires and needs), *agentic actions* (ACT; self-directing actions that enable goal attainment), and *action-control beliefs* (BELIEVE; believing in one's abilities to achieve goals; Shogren & Raley, 2022).

Given self-determined actions develop over the life course (Shogren & Raley, 2022), considering how to support self-determination throughout childhood, adolescence, and adulthood is essential. A unique aspect of Causal Agency Theory is the focus on the importance of autonomy-supportive environments and interventions to promote the development of self-determination. Autonomy-supportive environments, including autonomy-supportive classrooms, focus on creating conditions that advance motivation and self-determination (Reeve, 2016). Autonomy-supportive interventions focus on providing inclusive and equitable learning opportunities to support the development and use of skills, abilities, and attitudes associated with self-determined actions, such as choice making, decision making, problem solving, goal setting and attainment, planning, self-management, self-advocacy, self-awareness, and self-knowledge. Exploring students' perspectives on their experiences of autonomy-supportive environments and interventions are needed as the development of self-determination is shaped by each student's culture, identity, family, and community values, as well as developmental experiences (Hagiwara et al., 2021).

The Self-Determined Learning Model of Instruction

The *Self-Determined Learning Model of Instruction* (SDLMI; Shogren, Raley, et al., 2018; Wehmeyer et al., 2000) is an evidence-based, autonomy-supportive intervention aligned with Causal Agency Theory. The SDLMI can be implemented in classrooms to teach multiple abilities and skills associated with self-determination as students set and pursue goals to improve in- and post-school outcomes, including academic outcomes (Hagiwara et al., 2017). There are

three core components of the SDLMI: Student Questions, Teacher Objectives, and Educational

Supports. The core components of the SDLMI are delivered across three phases of instruction—

Phase 1: Set a Goal, Phase 2: Take Action, and Phase 3: Adjust Goal or Plan. Within each phase,

students answer four Student Questions as they set goals, make an action plan, and evaluate goal

attainment. Teachers use Teacher Objectives in supporting students to answer the four Student

Questions in each phase and provide Educational Supports to meet students' needs (Shogren,

Raley, et al., 2018). The SDLMI is designed to be a process that students can use across

academic semesters, learning and growing as self-determined learners through repeated exposure

to the intervention in autonomy-supportive classrooms and environments. Ongoing research is

needed to examine effective supports, opportunities, and experiences from students' perspectives

as they use the SDLMI over time to enhance self-determination and school outcomes.

The SDLMI is designed to be flexible and can be embedded in any type of academic,

social-emotional, or transition instruction, enabling students to set goals meaningful to their

lives. Educators can align the goals students set with the SDLMI with their curriculum and the

funds of knowledge (i.e., student and family values and experiences; Moll et al.,1992) students

bring to their classes. For example, the SDLMI has been implemented in one-on-one, small

group (Shogren, Burke, et al., 2018) and whole class formats (Raley et al., 2021), in core content

curricula (Raley et al., 2022) and transition instruction (Shogren, Burke, et al., 2018) for students

with and without disabilities in secondary classrooms. The SDLMI has been shown to be an

effective intervention across contexts to enable students with and without disabilities to set goals

across learning domains (Hagiwara et al., 2017). However, ongoing research is needed to explore

how the SDLMI can be effectively implemented in virtual learning environments as well as in

inclusive, general education settings. This is essential as research has suggested the vital role of

self-determination actions in enabling students to navigate virtual learning during the COVID-19 public health emergency (Toste et al., 2021) as well as the impact of the SDLMI on student outcomes in inclusive, general education settings (Raley et al., 2021). Additional research is needed, however, to advance understandings of the impact and use of the SDLMI under these conditions from students' perspectives. The purpose of this study, therefore, was to address this gap in the literature. The following research questions guided this study:

1. How do secondary students with and without disabilities describe the impacts of the SDLMI on their self-determination and academic learning in inclusive general education classes?

    a. In what ways did secondary students with and without disabilities use the SDLMI during the COVID-19 pandemic to work toward academic learning goals in virtual instruction?

2. What supports and opportunities provided by general education teachers when implementing the SDLMI during academic instruction do secondary students with and without disabilities find most impactful?

3. What other factors (e.g., family experiences, past supports, opportunities for self-determination) do secondary students with and without disabilities identify as most supportive in their use of the SDLMI in inclusive general education classes?

Method

Participants

We sampled students with and without disabilities from a suburban Midwestern high school that has been implementing the SDLMI in inclusive general education classes in partnership with a local university for over six years. Given that the purpose of this study was to gain a deep understanding of how self-determination and the SDLMI impacted students'

perceptions of their learning outcomes, purposive sampling was used to recruit students who had used the SDLMI for at least one academic year in general education classes. The partnership initially emerged in the Spring 2017 because of a mathematics teacher who wanted to promote self-determination in her class (Raley et al., 2018). In subsequent years of the partnership, training on the SDLMI was expanded for other mathematics teachers and teachers across different departments (e.g., mathematics, English Language Arts, special education). The initial teacher served as a coach to other teachers. The focus of the present study, however, was students who used the SDLMI in inclusive mathematics classes, as this was where implementation started, and the teacher sustained the SDLMI through virtual learning resulting from the COVID-19 pandemic. The lead author collaborated with the teacher to share information about the study at the start of three inclusive mathematics class periods (Algebra, Pre-Calculus, AP Calculus) and asked students to sign up if they were interested in sharing their experiences with the SDLMI. In total, eleven students across the mathematics classes signed up to participate, and ten individual interviews were scheduled (the remaining student did not respond to follow up).

Self-reported demographic information was collected from the ten participants (see Table 1). Five students did not report their grade level. The remaining students were in 9th to 12th grade and between the ages of 15 and 17. The majority identified their race/ethnicity as White/European American ($n = 6$), followed by Asian American ($n = 2$), two or more races ($n = 1$), or did not report their race/ethnicity ($n = 1$). Students identified as female ($n = 5$), male ($n = 2$), non-binary ($n = 1$), reported preferring not to say ($n = 1$) or did not report ($n = 1$). Two students reported having a disability. Students' experiences using the SDLMI ranged from one to three academic years. More information about student participants is provided in Table 1.

SDLMI Implementation

As part of the partnership, the mathematics teacher supported the development and implementation of lesson plans and materials for delivery of the SDLMI in her inclusive mathematics classes. Other teachers in the mathematics department—as well as all teachers when the initiative expanded—received standardized training and coaching supports. As a part of this training, teachers received lesson plans and implementation resources (e.g., PowerPoint presentations, worksheets) that they could individualize to their students' needs while ensuring the SDLMI core components are delivered as intended. Lessons are organized around the three phases of the SDLMI and the 12 Student Questions embedded in those phases. Each of the three phases of the SDLMI presents a problem to be solved by the student. At the end of each lesson, and after teacher instruction, students respond to the targeted Student Question, which guides them in setting and pursuing their own goals. Lessons last 15-20 minutes and are delivered 1-2 times per week and are oriented around students setting goals related to the class content with which they are engaged (e.g., mathematics). To individualize and support students to engage in the SDLMI, consistent with implementation protocols, teachers identified several goal area "buckets" that students selected from and used to guide their identification of specific goals aligned with their learning needs (Raley et al., 2018). For example, in one of the mathematics classes, the goal buckets identified by the teacher as critical to success included note-taking, study strategies, and time management. Within these buckets, students were supported to identify a specific goal aligned with their vision and needs during Phase 1 (e.g., practice completing 10 AP Calculus exam questions a week). See the SDLMI Teacher's Guide (Shogren, Raley, et al., 2018) for more information.

Procedures

A semi-structured interview protocol was created and used during all interviews. All interviews were held individually and led by the lead author via Zoom video conferencing software during the school day. The lead author developed the initial interview protocol with support and ongoing feedback from the second and fifth authors. The interview protocol used a series of guiding questions related to the research questions (e.g., How did you learn about self-determination?; What do you want teachers to know about how to support you in using the SDLMI to work toward your academic learning goals?) as well as follow up probes to support students to expand on their responses, as needed. The interview protocol is included in supplemental materials (Table S1). Interviews lasted between 11 to 22 minutes ($M = 15$ minutes). Interviews were audio recorded via the Zoom virtual meeting platform and transcribed using an external service. The research team reviewed all transcribed interviews to ensure accuracy. Human subjects approval was obtained from the university Institutional Review Board (IRB) and from the school district.

Data Analysis

We used qualitative content analysis to systematically analyze and classify the data into core categories that shared similar meanings to describe the central phenomenon (Cho & Lee, 2014), in this case, students' experiences with the SDLMI in inclusive classes. The core categories aligned with the research questions, which focused on the impacts of the SDLMI on students' learning outcomes, impactful supports and opportunities, and other general factors that enhanced student learning outcomes when using the SDLMI. Additional codes were added to the core categories if new themes emerged. Given the dearth of existing research on how students perceive the impact of the SDLMI on their learning outcomes, we used inductive qualitative content analysis (Schreier, 2012). This approach focuses on open coding, creating core

categories, and abstraction of the central phenomenon (Elo & Kyngäs, 2008). The lead author

served as a primary coder, and three co-authors supported developing and refining the analytic

procedures through regular meetings as the codebook was being developed. We started by

exploring the data for a central phenomenon and then searching for core categories and

associated themes aligned with this central phenomenon. A central phenomenon in qualitative

research is defined as the concept that links all core categories to generate overall meaning from

the data (Elo & Kyngäs, 2008). Then, within this central phenomenon, there are core categories

and associated themes. Core categories refer to the representative codes that appear repeatedly in

the data, which we clustered together to make conceptual meaning (Tracy, 2010). Each interview

served as the unit of analysis, and each theme served as a unit of coding that meaningfully

captures the meaning of the data across interviews, aligned with each core category.

Systematically developing core categories and associated themes aligned with the central

phenomenon and the research questions advance the credibility of the qualitative content analysis

(Elo et al., 2014; Schreier, 2012).

To identify the central phenomenon, associated core categories, and themes, we

undertook the following steps. First, given the importance of memos as a tool to enhance the

process and outcomes of qualitative research (Birks et al., 2008), the lead author developed

memos for each transcribed interview and summarized reflections. The lead author and three co-

authors met and discussed these reflections. Next, building on the reflections, the lead author and

three co-authors engaged in an iterative approach to coding the data. We started with open

coding (i.e., initial coding) or first-level codes that focus on what is present in the data to drive

the analytic process. Second, the lead author developed a preliminary codebook with codes, a

definition of each code, and representative participants' quotes to guide the process of coding

(Saldaña, 2016). The coding team then met and iteratively engaged in revising the codebook to ensure clarity and accuracy. After agreement on the codebook was reached, the lead author continued to conduct the open coding with all the data. The next step was to meet with three co-authors to discuss the results of open coding, including identifying areas of similarities and differences across codes. For example, we discussed how the open coding could be aligned with the research questions and how similar codes on the "impact of the SDLMI on self-determination" and the "impact of the SDLMI on academic learning outcomes" could be grouped together into a core category on the "impact of the SDLMI on student learning." Third, after identifying first-level codes, the lead author conducted axial coding, generating second-level codes that focus on organizing, synthesizing, and categorizing codes to reflect commonality and relationships between codes to shape core categories and associated themes (Saldaña, 2021). Next, the coding team further examined the core categories and themes, reflecting on our analytical thinking and the relationships among the codes that shaped core categories and associated themes to establish agreement, ensuring the credibility of the analysis phase (Elo et al., 2014). The final stage involved using the developed core categories and associated themes to identify the central phenomenon based on the emerging data (Schreier, 2012). All coding was implemented in MAXQDA Analytics Pro 2022, version 22.3.0.

Positionality

Throughout this investigation, the coding team acknowledged and challenged our beliefs and biases that might have impacted the analysis and interpretations of the students' responses. Each author has unique experiences and viewpoints that contribute to our belief about the importance of promoting self-determination for all students, especially students with disabilities in general education classes. These experiences and views are shaped by our collective work

focused on strengths-based approaches that support all marginalized students, including students with disabilities, to build self-determination in inclusive school contexts. The coding team engaged in reflexive activities to challenge our biases and prior assumptions throughout our analytic procedures and triangulate results across the research team. The lead, second, and fifth authors worked together on the development of the interview protocol. The lead author conducted the interviews with the students, and the lead author with second, third, and fourth authors worked together on the data analysis. The other authors served as peer debriefers and engaged in member checking. All authors' positionality statements are included in supplemental materials (File S1).

Trustworthiness

We sought to meet quality indicators for qualitative research to ensure credibility and trustworthiness (Brantlinger et al., 2005; Tracy, 2010). We utilized a team approach, leveraging triangulation of multiple investigators' perspectives. Using triangulation, different perspectives were considered, and we were able to check and re-check interpretations of the data. The lead author engaged in discussion and reflection with the coding team during data analysis to ensure that he set aside his preconceptions about the phenomenon and focused on students' responses and experiences. Furthermore, to ensure the integration of lived experiences with disability in our interpretation of results, enhancing credibility and trustworthiness, a co-author who has lived experiences with disability but was not involved in the interviews or data analysis served as a peer debriefer by reading all transcribed interviews, coding processes, and interpretations of the findings. The lead author met with the peer debriefer at the end of each stage of the research and writing process to discuss and integrate feedback from the peer debriefer. For example, after analyzing the data, the co-author peer debriefer made suggestions to clarify definitions used to

distinguish between the core categories.

Findings

Throughout this section, pseudonyms are used to protect participant confidentiality. Our qualitative content analysis of students' interviews led to core categories and associated themes that centered around the central phenomenon of the importance of self-determination. This is depicted visually in Supplemental Figure S1. Our core categories highlight students' perceptions of the impacts of the SDLMI on their learning, how the supports and opportunities provided by general education teachers impacted them, and other factors students identified as influencing their use of the SDLMI. Each of the core categories and associated themes and sub-themes associated with each research question are described below.

Research Question 1: How Do Secondary Students with and without Disabilities Describe the Impacts of the SDLMI on Their Self-Determination and Academic Learning in Inclusive General Education Classes?

Central Phenomenon: The Importance of Self-Determination

The central phenomenon of the importance of self-determination connected all of the core categories and associated themes. All students described different ways that self-determination drove them to achieve things they wanted in their lives within and across the interviews. For example, Sara said, "Self-determination is the thing that keeps you chugging along in your path." Maria described how setting and working on their goals made them more motivated. They said:

> If I was to not have a goal, and not push myself, and not have something that I can
> strive for, then I'd be a lot less motivated and a lot less sure of what I wanted to
> do. I think self-determination can help me plan out what I want to do, and actually
> do it.

The following sections describe three core categories and associated themes centered around the importance of self-determination.

SDLMI Impacts on Student Learning

Students shared their perspectives on the impact of the SDLMI on their learning in mathematics classes. Several associated themes and sub-themes are described below.

SDLMI Impacts on Student Self-Determination. Students described how using the SDLMI helped them learn about skills that are associated with self-determination, like goal setting, problem solving, and decision making. Students also described how the SDLMI supported them in understanding what they need and how they can start to work toward their goals. Maria said:

> I think it really positively impacted my future goals, because now I have a baseline of how to set them. I knew how to set goals, and what my goals were, but I think this self-determination really helped create a really good structure for me to build off that.

Amy explained how the SDLMI "made [her] future goals, more achievable. Because it's good to set better goals right now and set good practices and habits." Eric mirrored this point saying:

> I think it creates good habits, lifelong habits, that you can use…looking at yourself, identifying your weaknesses and improving on those weaknesses. So, I think the goal itself that you set, may not necessarily help you, but the process of going through SDLMI and looking at yourself, setting a goal, working towards that goal, I think that would help me immensely.

This thought is similar to Donna's perspective that the SDLMI teaches students not only how to set goals, but also how to make an action plan to problem solve as they work toward goals. She said:

… you need steps to take when you're doing goals…You can't just say, 'I want to do

this,' and go ahead and do it. You have to find out why you want to do it or how are you

going to do it with the resources that you have with you.

Other students, like Anna, described how learning skills associated with self-determination

supported them to be more ready to go to college. She said:

I think those things are just really valuable for all aspects of life. And I think of college in

the future as being a time where you're more on your own, you have people there for you

and teachers, but it's a lot more independent. So, I think the things that we're working on

in SDLMI will help us be able to be successful without as much support.

 Maya shared similar thoughts, saying "It's definitely also a helpful practice for setting future

goals in college and stuff… I guess it just gives me experience to set good goals." Overall, these

responses reflect how the SDLMI enables students to become more aware of their needs and how

to pursue goals, and make an action plan, and problem solve as they work toward goals, key

aspects of self-determination.

Developing their Definitions of Self-Determination. A sub-theme related to the impacts

of the SDLMI on student self-determination focused on how students began to learn how to

define self-determination. Causal Agency Theory, which provides the theoretical framework for

the SDLMI, defines three self-determined actions: volitional action (DECIDE), agentic action

(ACT), and action-control beliefs (BELIEVE; Shogren & Raley, 2022). While students did not

use these terms in the interviews, they did express how they used skills aligned with each of

these areas after learning through the SDLMI. For example, some students described self-

determination in ways aligned with volitional and agentic actions. Brian said, "I think it means

setting a personal individualized goal and brainstorming a way to achieve it." This is similar to

how Jorden defined self-determination as "…setting your own goals, and trying to achieve them, either long-term or short-term goals." Donna defined self-determination as "…going through and following with your goals, and maybe not stopping, and just taking the precaution or the strategic steps to finish what you started."

Other students described how the SDLMI and growing in self-determination impacted their motivation and beliefs about their ability to act in their lives. Maria said that self-determination could be defined as: "…something that I choose to do. Wherever I can push myself, that's where I'll go." Sara said:

Self-determination…I'd say it's the drive that you provide yourself. So obviously, I mean, it's kind of in the name, but it's the motivation and the effort you put into life day by day. I don't know. Self-determination is just self-determination. It's your drive. It's your effort. It's your motivation. It's this, that, and the other. It's your skillset. It's your everything. It's how we get through life and school and everything else. It's what keeps us going. It's the gas to your car.

Emily also said, "I think that self-determination means the drive that you have for yourself, and the motivation to be able to guide yourself, make a plan, have a goal, and fulfill it." Eric defined self-determination as "self-reflection, but not just surface level self-reflection, but deeper. You write things down. You make it a point to try to look deeper into yourself."

SDLMI and Academic Goals. Students also talked about the academic goals they set using the SDLMI and how it impacted their academic learning. While the goals varied as students assessed their needs and priorities and thought about the goal buckets their teachers established, many students set goals to improve their grades or get prepared for exams. Brian's goal was to "…achieve a five on the AP exam in calculus, so basically, my goal just relates to

how I can achieve that, what measures I need to take, what study habits I need to adapt outside of school." Likewise, Amy set goals to get good grades as well as use learning strategies, saying: "some of my academic goals were just to get all A's, which I've done. But that usually comes easy to me. But one of mine that wasn't academic was just taking notes, taking good notes." Other students set goals to use study strategies as Maria did. They said:

> My goal bucket was study strategies. I take good notes, but I never go back and read them. So, I made a goal for myself to take 10 minutes every night to just go back and read over those notes, and make sure I could understand them and work through them.

Several students set goals to complete class assignments. For example, Emily said, "my goal was to have my homework done before 12:00PM or 11:00PM, around that range." Overall, students shared how they were able to set different goals that enabled their academic learning and aligned with their individual needs and that they could use the SDLMI process to better understand what they needed to move toward their academic goals.

     Using SDLMI to Improve Academic Learning. A sub-theme related to academic goals was students' descriptions of how the SDLMI enabled them to grow and become more motivated in their academic learning. For example, Maria stated, "I noticed that I was a lot more motivated, and I wanted to actually get my homework done, and I was able to complete my goals… I knew specifically what they were and how to accomplish them." Other students described how they were able to persist in trying to achieve their goals. For example, Eric said:

> One thing that I think I have noticed… I didn't achieve my goal for my first semester. I still do procrastinate. I tried to make it a point, but then I failed. But this semester, when I'm working towards better note taking and trying to learn more effectively with my notes, I think that has relieved a lot of stress from learning the concepts in math.

Other students described how they noticed a difference in how they focused on one specific goal to achieve. Anna expressed:

I think this year, since I've been mainly focusing on test stuff, it's been my best year of tests. I've done the best I've ever done in math on tests, especially last semester, because I was focusing on a similar goal then. So, I think it has helped me just think more about what I'm doing to prepare for tests, and if it's effective and what else I could be doing…

Other students also commented on how teacher implementation of SDLMI showed them how building and learning new skills takes effort and time. Sara emphasized that "changing tried and true habits takes a really, really long time." Jorden also shared:

Right after I set my goal, I completed some more homework than I usually was able to with math. I do think that, over time, after I did that, it got less effective, which is why I was thinking maybe there should be some short-term goals, too. I noticed, right after I set my goal, I got a bunch done, but it started falling off after that.

Overall, students highlighted the importance of opportunities and supports to continue to stay engaged and motivated with their SDLMI goals over time.

Students' Use of SDLMI during the COVID-19 Pandemic. When asked about their experiences using the SDLMI during the pandemic, they described how setting and working toward their academic goals using the SDLMI played an important role in keeping them engaged in virtual learning. Anna shared:

I think it mainly helped by giving some structure because it was a really strange year for learning, and I was online the entire year. So sometimes I felt like I wasn't even in class and it was hard to get in the mindset of school. So, it helped me structure things more and remind myself that I'm still working on math and there's goals that I'm working towards.

And it's not just getting through the school day, that there's more to it than that. Similarly. Maya shared "SDLMI goals helped me have like a clear … end result that I know I can just steadily work towards even though there's chaos everywhere else." Maria also mentioned the role of setting and working toward goals during this challenging time, saying:

> I think it really kept me on track because I used a lot of small goals throughout the year, throughout my courses. To be like, 'Hey, if you get this done, then it'll be much easier to do this other thing. It'll be a lot harder to put it off, and put it off, and put it off.' I think it was just a motivating factor. A lot of my teachers were like, 'Hey, if you do this, it'll make it a lot easier in the future.' I just took them up on their word, and it actually did.

Overall, these responses from the small number of students who used the SDLMI during virtual learning suggest the importance of self-determination skills and abilities to navigate challenges in virtual instruction.

Learning about Future Goals. As students were using the SDLMI to set and work toward their academic goals in their inclusive math classes, they also shared how they began thinking about their future goals. The SDLMI led to some students identifying more than one goal that they want to achieve in their future. Many students became more focused on goals related to going to college. Brian identified his long-term goals as "…getting through my undergraduate degree or my undergraduate program with good grades, make connections, maybe figure myself out a little bit…graduate school, a career, just, I guess, something stable, something that I can find pleasure in." Likewise, Maria shared, "I want to go to college and hopefully study biological anthropology. After that, I'm going to hopefully get my master's, and then become a librarian sometime in the future."

Other students identified more general future goals that encompassed different aspects of

their lives. For example, Sara identified her goals as "…having a healthy, happy family and to take care of my family and keep myself surrounded by the people I enjoy and, I don't know, live a successful and happy life." These goals suggest students' growth in identifying multiple goals for their future that align with what they want to accomplish and the self-determined lives they want for their future.

Research Question 2: What Supports and Opportunities Provided by General Education Teachers when Implementing the SDLMI During Academic Instruction Do Secondary Students with and without Disabilities Find Most Impactful?

Students shared their perspectives on opportunities and supports provided by general education teachers. Specifically, students shared the types of opportunities and supports they found most impactful in their learning.

Opportunities Teachers Provided in Using the SDLMI in Classes

Students identified the importance of repeated opportunities for self-determination in their classes. For example, Sara said she needed:

> …patience that no matter what goal I set or what I try to achieve, it won't happen overnight. Getting rid of those habits is so incredibly hard. And even if it doesn't look like I'm trying, I'm honestly trying my best. And I've said over and over, I want to get better at time management. And there will be times where I go back on that and I need to start from square one, and that's just part of breaking habits.

Brian also shared:

> There needs to be a lot of consistency. I think if you were to skip a couple weeks…you might lose sight of your goal, so I think that it's something that you almost need to dedicate, maybe, a couple minutes every morning, once or twice a week to, and just say,

'This is your goal, where are you at? What can you do to further reach it? What can you

do to stay on your path if you are reaching it?

Similarly, Anna felt that the use of the SDLMI is most helpful if it is used frequently. She said,

"I think it might help if we talked about it more often."

Other students mentioned how teachers motivated them to get engaged when using the

SDLMI. Donna said, "I think that just providing a sense of curiosity because our teachers are

here to provide learning tools for us." Other students also mentioned that they need to have more

opportunities to practice self-determination skills beyond their class. Amy said, "I feel I don't act

on [my goals], because it's just in the classroom." Overall, students' responses highlight the

importance of more repeated opportunities in their classes to engage in self-determined learning.

Student Support Needs in Using the SDLMI in Classes

Students also described what supports were most impactful in using the SDLMI. Emily

said:

I think just that it's good when teachers constantly give out reminders to remember the

plan. It doesn't need to be super frequent, but once in a while, maybe every few weeks or

every week, just give us a reminder…a Google form or something that we can do to

update ourselves and also the teacher about our goals so that we can keep track of it. We

can remember to do it and they can help us be accountable, I think.

Amy said, "I think teachers should help remind us or check up on us. 'Are you doing this?' If I

want to do better notes, give us a guide or look at our notes and be like, 'Do you think you're

improving?' Check up on us, I guess." Sara expanded on this point by saying:

I have a really hard time remembering what I put down because I have so many goals

because I have so many things I wish to achieve and I wish to better myself that once I

submit that thing on SDLMI, it's really hard to go back and find it. So, I wish that it was

an easier layout where maybe it was a website where I could see exactly what my goals

were and my steps to get to those goals and what I'd already planned out, and I could go

back and edit it or something like that.

Anna suggested how teachers can provide supports for them when using the SDLMI, saying it is "helpful to have a teacher's advice, because they know well about what students have done in the past."

Eric highlighted a desire for more connections, saying:

I think that would help, if they like met with you every once in a while, personally, rather

than just explaining up on a board, how you can help. If we could get more one on one

time with the teacher, with them actually working with us on the SDLMI, rather than just

submitting a question that we have to answer on Google Classroom. Yeah. I think that

would be more effective.

These findings suggest that students are aware of their supports needs, and teachers and

the SDLMI can build more supports for all learners in general education classrooms.

Research Question 3: What Other Factors (e.g., family experiences, past supports, opportunities for self-determination) Do Secondary Students with and without Disabilities Identify as Most Supportive in Their Use of the SDLMI in Inclusive General Education Classes?

Students also described how other factors, like family and community supports, influenced their efforts as they used the SDLMI to set and work toward their goals. In addition, a new theme emerged that was not directly asked in the interview protocol about the importance of early opportunities to learn about self-determination and how it impacted later self-determination

and engagement in the SDLMI.

Family and Community Factors

Students described several ways that their family and school community influenced their efforts to set and work toward their goals when using the SDLMI. For example, Brian shared how his family and the values they held motivated him to work toward his goal:

A big family goal of mine, or at least a moral in my family, is to be successful, to be happy and to find pleasure in what you're doing. So, when I set my goal, I didn't do anything… that would make me unhappy or would [be too much] to achieve, but I set something that's more comfortable and that I know I can get and I can stay motivated to achieve. Realism is important in my family.

Amy shared ways that her family valued academics and ways that her classmates also motivated and pushed her. She said:

I think my parents played a big part…because they set standards for me. But then stuff such as notes, my classmates and stuff influence that. If I see them taking good notes I want to too. And I use them as a reference.

Maya shared "Because my family and my community, the people I'm surrounded with value study and academics, it motivates me to also value it. The goals really helped me be able to do better academically." This is consistent with what Anna shared about the impact of her family's value for collaborating and how that played out at school: "because some of my friends have similar goals, so we can talk about different ways that we've used to achieve those goals and how to improve. And sometimes, we can help each other with our goals." Maria said, "I think my parents instilled a very strong work ethic in me, so that I want to get things done in the best way I can." Emily also shared "I think to work hard is very important, as well as honesty and kindness,

and to build upon that." Overall, these responses suggest that both families and school community (e.g., peers) impact students' goal setting process and motivation when using the SDLMI.

Early Learning of Self-Determination

As mentioned, while not directly asked about their early learning of self-determination, multiple students talked about this. Students shared ways they learned about self-determination early in their lives, even if they were not using that terminology, as Sara said:

> I don't know if we necessarily learn about self-determination or if we grow up having to figure it out and then you put two and two together and you figure out that's what self-determination is… You got to get up, get out of bed and you go to preschool, you go to kindergarten, you go to whatever. Self-determination is an inherent human skill. It's something we all have. I mean, I don't remember a specific time in my life where I figured out what self-determination was. I think we're born with it and then we learn the name for it.

Not all students, however, felt they had learned about self-determination when they were younger. For example, Anna said she did not learn about self-determination until high school as the time when "…we started doing SDLMI. I started doing it as a freshman, so I didn't know it was a thing until high school."

Discussion

The purpose of this study was to examine students' perspectives of self-determination and the SDLMI in their inclusive general education math classes. This study found several themes aligned with the core categories and central phenomenon of the importance of self-determination. First, students reported self-determination positively influenced their motivation,

learning, and goal attainment, a finding consistent with literature exploring the outcomes of the

SDLMI on measures of self-determination and goal attainment (e.g., Raley et al., 2020). Second,

students described ways they perceived the SDLMI enabled them to grow into self-determined

learners, including learning about themselves as well as their values and needs. Relatedly,

students described growth in thinking about their future after high school, expanding on previous

work suggesting the association between self-determination and the number of future goals set

by students with and without disabilities (Di Maggio et al., 2020). Third, students identified ways

that the SDLMI and having goals to motivate their actions supported their engagement in virtual

learning during the COVID-19 pandemic. This aligns with other research that has found self-

determination enabled students to navigate challenges during the pandemic (Toste et al., 2021).

Fourth, students highlighted how their teachers, peers, and families impacted their self-

determination and goal setting. Relatedly, students shared their perspectives on the impact of

early learning of self-determination, leading to their later growth as self-determined learners.

This emergent finding suggests, from students' perspectives, the importance of promoting self-

determination through early childhood, as has been noted by other researchers (Shogren,

Zimmerman et al., 2022), and highlights the need for more research in this area.

Limitations

Several limitations need to be considered when interpreting the findings. First, the focus

of this study was students who were using the SDLMI in inclusive, general education settings.

This meant there was a low number of students with disabilities, particularly students with

intellectual disability, who were in the sample given low rates of access to inclusive education

(U. S. Department of Education, 2022). This perhaps reflects systematic barriers that students

with disabilities, inclusive of students with intellectual disability, encounter to access inclusive

opportunities and experiences that promote the development of self-determination. Relatedly, this limited number of students with disabilities included in this study (20%) did not allow us to compare their experiences to other students without disabilities. Second, the length of engagement with the SDLMI differed across participants. Most students (70%) had used the SDLMI over two academic years, but others had one or three or more years of experience, making it challenging to separate and compare experiences. Third, at the high school where the study occurred, the majority of students were White/European American. Future research is needed that explores the perspectives of students from a range of sociocultural identities and considers the role of ongoing, limited access to inclusive education and systematic marginalization on perceptions and experiences of inclusive education, self-determination, and the SDLMI. This is important given research suggesting disparities in access to the general education curriculum and self-determination outcomes for racially and ethnically marginalized students with and without disabilities, particularly when there is no systematic consideration of culturally responsive practices (Shogren et al., 2021).

Fourth, although any students that had participated in the SDLMI at the high school were invited to participate in the study, students self-selected if they wanted to participate, so this study does not capture all perspectives and may reflect positive experiences. Ongoing research to explore the perspectives of a range of students that have had positive and negative experiences with the SDLMI. Fifth, we used student self-report of demographic characteristics and did not confirm this with administrative data. However, as our focus was student perspectives, we chose to explore students' identification despite research reporting discrepancies between self-report and administrative reports of disability and eligibility for special education services (Shogren, Pace, et al., 2023). Sixth, students who participated in this study were from three mathematics

classes. Future researchers should recruit students who have used the SDLMI in different inclusive, core content classes to capture students' experiences in a variety of contexts. Finally, although efforts were taken to share the results with students who participated in this study to ensure trustworthiness, we were not able to get student feedback because of time and school schedule constraints.

Implications for Future Research and Practice

Despite the limitations, students shared perspectives that can shape future research and implementation of the SDLMI in inclusive general education classes for all students.

Research Question 1: How Do Secondary Students with and without Disabilities Describe the Impacts of the SDLMI on Their Self-Determination and Academic Learning in Inclusive General Education Classes?

Findings from this study provide further evidence, from students' perspectives, about the impact of the SDLMI on self-determination and academic learning outcomes. Students found the SDLMI to be effective in supporting them to build abilities and skills associated with self-determination over time, as well as advancing their future goal orientation and motivation. This is also consistent with previous research, which found that students' first semester academic goal attainment when using the SDLMI predicts end of year self-determination (Raley et al., 2020). Given the fact that self-determination grows over time with repeated opportunities and effective supports, more research is needed to explore the relationship between self-determination and academic goal attainment over time as students used the SDLMI across multiple years as well as how learning carries forward as students transition from school to adult roles and responsibilities.

Relatedly, students in the current study identified the importance of goals as academic enablers (e.g., learning strategies) that prompted them to engage with the core content and make

more progress toward their goals. More research is needed to explore how students change and grow in their goals as they learn more about their needs and how to effectively support, in practice, repeated exposure to the SDLMI and other self-determination interventions. Students highlighted the impact of long-term engagement in goal setting and supports when using the SDLMI, and emphasized they benefited most from repeated opportunities and individualized supports. Determining the best ways to do this, in practice, in the context of inclusive general education is an area of need for future research. There is also abundant room for further progress in determining when and how to provide students with more supports for self-determination, as needed, based on a tiered supports framework. Overall, students' voices aligned with researchers' assertion of the importance of engagement with the SDLMI over time, in different contexts, and across the life course (Shogren & Raley, 2022).

Research Question 2: What Supports and Opportunities Provided by General Education Teachers when Implementing the SDLMI During Academic Instruction Do Secondary Students with and without Disabilities Find Most Impactful?

Students' perspectives highlighted the importance and impact of autonomy-supportive interventions, like the SDLMI, as well as autonomy-supportive classrooms. Students highlighted ways that their teachers created opportunities and supports that enabled them to engage in self-determined actions over time. More research is needed to determine effective practices to support teachers in establishing autonomy-supportive classrooms and how this impacts their implementation of autonomy-supportive interventions. Casual Agency Theory emphasizes the joint roles of autonomy-supportive self-determination interventions and classes in providing opportunities that enable students to build and grow in self-determination (Shogren & Raley, 2022). Students identified the importance of both autonomy-supportive self-determination

interventions and environments to their use of self-determined learning. More research is needed to understand this relationship and how it can be supported in practice. In addition to supporting practices that enable teachers to effectively build autonomy-supportive classrooms and integrate the SDLMI and other self-determination interventions into the general education curriculum, more research is needed on teacher perceptions of their use of the SDLMI. For example, assessing teachers' perceptions of their abilities and roles when implementing the SDLMI and creating autonomy-supportive classrooms can advance understanding of how to provide effective coaching and implementation supports to enhance teacher and student outcomes.

Students also communicated the diverse ways they defined self-determination and its impacts in their lives, as well as the importance of individualized opportunities and support for self-determination to meet their individual needs, preferences, and values. Ongoing research is needed, however, with a wide range of students who have a range of cultural identities, particularly given research suggesting the impacts of disability and race and ethnicity on disparities in self-determination outcomes (Shogren, Shaw, et al., 2018). Further, additional research is needed on how to build individualized supports and frequent "check-ins" based on students' needs and preferences. For example, one student described ways that the SDLMI can be expanded through technology that allow them to remember their goals and action plans and inform their future goals, aligning with their values, interests, and needs. Research exploring the delivery of the SDLMI through technology holds promise to address these issues (Shogren, Mazzotti, et al., 2023).

Research Question 3: What Other Factors (e.g., family experiences, past supports, opportunities for self-determination) Do Secondary Students with and without Disabilities Identify as Most Supportive in their Use of the SDLMI in Inclusive General Education

Classes?

Students also highlighted the critical role of engaging families and peers in supporting

self-determination. They described ways that families' values influence students' goals and their

efforts and motivation as they work toward them. However, researchers have suggested

challenges with implementing the SDLMI and other self-determination interventions when there

is no alignment of students' identities with dominant identities (i.e., White, middle-class, non-

disabled) that have driven self-determination research. For example, research has suggested that

culturally responsive practices are not effectively integrated into self-determination instruction,

including the SDLMI, leading to disparities in student outcomes (Shogren et al., 2021). Racially

and ethnically marginalized students, when asked, consistently identify ways that they value self-

determination and integrate it into their lives, but schools often do not ask and integrate their

funds of knowledge (Scott et al., 2021). The meaning ascribed to, and the development of self-

determination is influenced by culture, identity, and family and community values (Shogren &

Raley, 2022). Therefore, future research and practice should seek to further elevate the voices of

racially and ethnically marginalized youth about their experiences with self-determination

interventions like the SDLMI, as well as explore perceptions and impacts of the integration of

culturally responsive practices into self-determination interventions. Finally, an interesting theme

that emerged from the interviews was the perceived importance of early experiences with

learning about self-determination. Although some students shared that they learned about self-

determination during high school, other students articulated ways that self-determination

influenced them from early childhood on. Ongoing research examining how younger students

experience autonomy-supportive classrooms and interventions to advance self-determination and

motivation is needed. This is important as researchers have suggested that building foundation

self-determination skills during early childhood can advance the development of self-determination across the life course (Shogren, Zimmerman et al., 2022), although additional research is needed.

Conclusion

As the focus on implementing self-determination interventions in inclusive general education settings grows, our findings provide information on how students define and use self-determination in their lives and the impacts of interventions like the SDLMI on learning and goal-directed actions in inclusive general education classes. Participants defined self-determination in ways aligned with existing theories and described impacts on goal-directed actions and academic learning that highlight the ways that students themselves think about goal setting and attainment. They also highlighted the roles of their teachers, peers, and families in shaping their self-determination and use of the SDLMI. The findings suggest that using research-based practices like the SDLMI can enable general teachers to support students across contexts in goal setting and enhancing engagement in academic learning. By considering and integrating family and student values, teachers can support students to set goals and leverage peer and family supports when as they are pursuing their goals in general education classes and beyond.

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Table 1

Student Demographic Characteristics

Name	Age	Grade	Gender	Hispanic or Latino/a	Race	Disability Status	SDLMI Experiences
Amy	16	Not reported	Female	No	Asian American	No	Two academic years
Anna	17	11th grade	Female	No	White/European American	Yes	Three academic years
Brian	15	11th grade	Male	No	White/European American	No	Two academic years
Donna	15	Not reported	Female	No	Two or more races	No	One academic year
Emily	15	Not reported	Not reported	Not reported	Not reported	Not reported	One academic year
Eric	17	12th grade	Male	Yes	White/European American	No	Two academic years
Jorden	17	Not reported	Prefer not to say	No	White/European American	No	Two academic years
Maria	16	11th grade	Non-binary	No	White/European American	Yes	Two academic years
Maya	17	Not reported	Female	No	Asian American	No	Two academic years
Sara	16	11th grade	Female	No	White/European American	No	Two academic years

Note. Pseudonyms are used to protect the confidentiality of participants.

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