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Goal setting in higher education: how, why, and when are students prompted to set goals? A systematic review

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The increasingly digital landscape of higher education has highlighted the importance of self-regulated learning in digital learning environments. To support this, academic goal setting is frequently used to enhance self-regulated learning in order to improve academic performance. Although many studies have explored the implementation of goal setting activities as behavioral modifiers, the implementation of goal setting across these studies is varied, and there is little consensus on the components which should be included and reported when studying goal setting activities. To provide an overview of the current state of the field, a systematic review was carried out examining studies which implemented academic goal setting activities within higher education over the last 14 years (2010–2024) to determine for whom, in what contexts, and how goal setting has been implemented. The results from the 60 included studies reveal a wide array of goal setting implementations covering many countries and academic disciplines. Overall, these implementations are highly heterogeneous, with large differences between studies in how goal setting is carried out. However, results also show a strong trend toward partial digitalization, with most studies using technology to deliver their goal setting activities, but very few adopting technologies for any further enhancements or support. Overall, the review reveals a focus on non-experimental studies exploring the content of student goals, with only a small selection testing the effect of goal setting in experimental studies. Based on these results we suggest future work focuses on testing the effect of goal setting, especially focusing on the interplay between the design of the activities and individual student needs, as well as further investigation of how emerging educational technologies can be used to scale and enhance goal setting activities.

KEYWORDS

goal setting, self-regulated learning, higher education, educational interventions, learning analytics

1 Introduction

Self-regulated learning (SRL) is an important skill for students aiming to succeed in higher education settings. SRL is described as a process in which students are metacognitively and behaviorally active in their own learning process, employing self-monitoring, learning, and reflection strategies to achieve their goals (e.g., Zimmerman, 1990). According to researchers, throughout their years in higher education, "students are on a journey to become

self-managing and self-directed learners" (Wong, 2013, p. 130), making SRL skills crucial for academic success. Understanding how to support learners' self-regulated learning is a topic which has garnered much attention from researchers over the years (Broadbent and Poon, 2015; Wong et al., 2019b). Studies have shown that students with high levels of SRL skills are more effective learners and achieve better academic performance than their peers (Dent and Koenka, 2016; Richardson et al., 2012). The importance of supporting SRL is further highlighted by findings that show that many students lack effective SRL skills, and struggle to implement SRL strategies in their day-to-day learning activities (Bjork et al., 2013).

The struggle that many students face while trying to effectively implement SRL skills in their learning processes is highlighted as higher education continues a trend toward digitalization, and technology-enhanced learning (TEL) becomes more mainstream and prevalent in higher education settings (Schmidt and Tang, 2020). While the content delivered in TEL environments may be the same as in face-to-face programs, the skills needed to thrive in these settings may differ (Kauffman, 2015). The abrupt transition to digital higher education during the COVID-19 pandemic underscored the reality that online learning can pose challenges, even for students who typically excel in conventional educational settings (Greenhow et al., 2022). Consequently, robust SRL skills are essential (Holzer et al., 2021). TEL environments typically involve less external regulation and follow a non-linear structure, requiring high learner autonomy. This makes SRL an essential component of effective learning within these settings (Prasse et al., 2024; Rasheed et al., 2020).

However, effectively supporting SRL in these increasingly digital learning environments has been shown to be a complex task (Prasse et al., 2024; Rasheed et al., 2020). Previous studies have demonstrated that students lacking SRL skills are often the least likely to use support tools when they are offered (Ryan et al., 2001; Won et al., 2021). Furthermore, not all tools intended to support SRL skills are equally effective, and some have significantly more positive effects on academic performance than others (Zheng, 2016). This could be due to the design of the tools (Wong et al., 2019a) and a lack of consensus on how best support SRL in a diverse student population.

Goal setting plays an integral part in SRL (Zimmerman, 1990, 2008) and hence, a common approach to supporting SRL is via goal setting interventions. Previous reviews showed that goal setting interventions can be a highly effective method to affect positive behavioral change (e.g., Latham and Locke, 2007), and goal setting is an established positive psychology method of improving performance, wellbeing, and health outcomes (Carr et al., 2021; Waters, 2011). In academic settings, goal setting interventions guide students through the process of setting their own study-related goals (i.e., academic goal setting), often with the intention of improving student academic performance, or overall SRL skills. However, studies have shown that when left to set their own goals, students often do not set meaningful or effective academic goals (Kismihók et al., 2020), suggesting that merely prompting students to set goals is unlikely to have positive effects, and additional guidance and support during the goal setting process is necessary to achieve the intended outcomes of the activity.

Given the variability in goal-setting interventions and the types of goals students set (e.g., Colthorpe et al., 2019; Nurjannah et al., 2020), little is known about how, when, and in which populations goal setting should be carried out, particularly in the context of setting academic goals. With this systematic review, we aim to gain a deeper understanding of research on academic goal setting in higher education. By doing so, we provide an overview of the current landscape of research in this field, outlining how goal setting has been carried out in prior research, in which contexts and populations, and the aims and findings of these studies. With these findings, we hope to provide insight into the current state of research on goal setting activities in higher education, synthesizing a diverse body of literature to provide suggestions for both possible future research directions, as well as practical implications for researchers and educators aiming to implement goal setting in higher education environments.

2 Theoretical framework

2.1 Self-regulated learning and goal setting

SRL is a broad framework which describes several cognitive, motivational, and behavioral processes (Efklides and Schwartz, 2024). These processes have been extensively studied, which has resulted in many models being developed to describe the process of SRL (for a review see Panadero, 2017). One of the most commonly studied models of SRL is that of Zimmerman, which has its roots in social cognitive theory (Puustinen and Pulkkinen, 2001). Zimmerman described SRL as the process of transforming mental and physical abilities into task-related skills (Zimmerman, 1990). This process is described as including both metacognitive skills as well as behavioral and motivational subprocesses. Zimmerman's model of SRL describes the process as cyclical with three separate stages: the forethought stage, the performance stage, and the self-reflection stage. As students move through these stages, they create plans and set goals, monitor their progress and use regulatory strategies, and then reflect on their performance, and adjust their behavior accordingly. As such, goal setting plays an important role in this process as it helps drive the SRL cycle and forms the basis for motivated behavioral change (Zimmerman, 2008). According to Zimmerman (2008), students' goals influence their motivation to learn, by focusing their attention on goal-relevant tasks, and increasing their effort and persistence. Moreover, there are various goal characteristics that influence their effect on performance.

Some of the earliest research into how goal setting could affect performance was done by Edwin Locke, whose work on the topic resulted in the development of Goal Setting Theory (Locke, 1968). According to this theory, which has been tested and expanded in the years since it was first proposed (Locke and Latham, 2019), goals mediate the relationship between knowledge, incentives, and task performance. Locke's original theory identified two characteristics that affected the effectiveness of goals: specificity and difficulty (Locke, 1968). Locke's research found that setting specific and challenging goals, resulted in better performance than 'do-your-best' goals (Locke, 1968). This has been supported by multiple studies which found that more specific goals resulted in better outcomes across several tasks and domains such as job performance in workplace psychology (Porter and Latham, 2013) and management of asthma in health psychology (Smith et al., 2013). In the intervening years since the original work on Goal Setting Theory, several other goal characteristics have been studied as mediating the relationship between goal setting and performance including goal type (Kim et al., 2021), extent of engagement with the goal setting activity (Schippers et al., 2020), and

additional support for other processes in the SRL cycle (i.e., planning, monitoring, reflection) (Lertladaluck et al., 2023).

Goal setting activities are commonly used as behavioral change interventions in several other fields outside of (higher) education. And reviews have been carried out to understand the use of goal setting in areas like sports performance (Healy et al., 2018; Jeong et al., 2021), medical rehabilitation progress (Kang et al., 2022; Rosewilliam et al., 2011), and disease management and control (Fredrix et al., 2018). These reviews all suggested that goal setting can have a positive effect on their various outcomes, they generally reported mixed evidence surrounding mediators and moderators of the relationship (Jeong et al., 2021), and there was a large variety in the components of goal setting included in each intervention (Kang et al., 2022). To our knowledge, almost no review studies have been done in previous years within educational contexts on academic goal setting. A review by Bruhn et al. (2016) focused on the effect of goal-setting interventions on K–12 students with behavioral problems. This review found that goal setting had a positive effect in students from primary through high school, especially in interventions where students were involved in the goal setting process. However, the review highlighted a problem in the literature with inadequate reporting of outcomes. While some reviews have been done on SRL interventions in education (Cousins et al., 2022; Dent and Koenka, 2016; Jansen et al., 2019), there is a gap when focusing on academic goal setting in higher education, which this review will explore.

Overall, these previous reviews tend to focus on the effect of goal-setting interventions on various outcomes, with many of them reporting mainly positive or mixed effects. There is less focus in these reviews on the context and characteristics of the goal-setting interventions which are implemented, with several of them acknowledging the lack of consensus within their own field on how these interventions are designed and carried out (e.g., Healy et al., 2018; Pearson, 2012). Several of these reviews also highlighted issues with small to non-existent samples of randomized controlled trials (RCT; Rosewilliam et al., 2011), large discrepancies in the implementation and practice of the process across the field (Rosewilliam et al., 2011), and a lack of research on the moderating effects of goal properties and individual differences (Healy et al., 2018). However, context is important when looking at how to carry out goal setting. While the underlying goal setting process may be the same, the context of higher education offers many unique considerations when implementing goal setting. Students are highly diverse, and higher education settings require specific skills and supports which may not be relevant in other settings. Therefore, it is of interest, in this review, to focus not only on the outcomes of goal setting studies, but also on how, when, and where the goal-setting activities are carried out, to create a more complete overview of the current state of goal setting within the context higher education.

2.2 Goal setting in higher education

2.2.1 Where has goal setting been studied?

The first set of study characteristics examined in this review is the population, context, and environment in which the goal-setting activities are carried out. Prior research has questioned the effectiveness of SRL interventions in general student populations, with some studies recommending the targeting of specific groups. For example, Morisano et al. (2010) suggested that goal-setting interventions may be most effective when applied to academically at-risk populations, targeting groups which require intervention the most. This finding was supported by Schippers et al. (2015). In their intervention aimed at improving academic performance, students were given a future-authoring writing activity. In this intervention, they outlined their ideal future and values, and created goals and plans to help them achieve those futures. They found that their intervention was most effective for closing the gender and ethnic minority gap in achievement, improving performance for students who tended to underperform compared to their cohort. Furthermore, some studies have suggested that students low in SRL skills may benefit the most, but engage the least, with these kinds of interventions (Dörrenbächer and Perels, 2016b).

The field of study or the population may also influence the effectiveness of a goal-setting intervention, with students in some fields like engineering potentially have distinct SRL profiles which require tailored supports (Nelson et al., 2015). Thus, understanding the populations and contexts in which goal-setting interventions are currently carried out, and how effective the interventions have been in those populations, may highlight gaps in the literature which are important to guide future design and implementation of these interventions.

2.2.2 When are students prompted to set goals?

The second set of study characteristics which will be examined in this review are those surrounding the context of the goal-setting activity. These characteristics especially cover the frequency of goal setting opportunities included in the activity, and whether goal setting is offered alone, or embedded in a larger intervention. The number of goal setting opportunities differs largely between goal-setting activities, but may have a significant effect on whether students learn skills which transfer beyond the scope of the intervention, with single session interventions potentially struggling to make lasting behavioral changes. For example, Wong et al. (2021) conducted two experiments to examine the effect of a goal-setting intervention, mental contrasting and implementation intentions (MCII). In both experiments, students only had one opportunity to set their goals. While positive effect of goal setting was found in the first experiment where students had to immediately complete a single task, no significant effects were found in the second experiment where students had to complete a course across multiple weeks. The results suggest that multiple opportunities to set goals might be needed (e.g., weekly) for learning that occurs over a period of time, for example in a course. Furthermore, Dörrenbächer and Perels (2016a) found that even with a multi-session SRL intervention combined with SRL training, transfer was limited beyond the scope of the intervention. Multiple sessions, or a longer-term intervention may therefore be more effective at improving performance, especially in a long-term manner.

2.2.3 How are students prompted to set goals?

The third set of study characteristics which will be examined in this review is the process through which students are guided while setting goals. These characteristics encompass how goal setting is prompted (e.g., alone or alongside a training module), the delivery method (i.e., medium) through which the intervention is carried out, and the additional technological supports which are used in the intervention. How goal setting is prompted can be an important

element of the intervention, especially considering that students' goal setting attempts tend to be poor without proper guidance (Nurjannah et al., 2020). Studies have suggested, that in the context of SRL interventions, prompts alone are not effective without prior training modules (Dörrenbächer and Perels, 2016a). This underscores the importance of incorporating training elements into goal-setting activities as well. Dörrenbächer and Perels (2016a) compared the effect of a weekly learning diary, with and without a prior SRL training session. They found that without prior training on SRL strategies, weekly learning diaries were not effective at improving students' SRL, even after multiple iterations across several weeks.

The delivery method and technological support may also form an important element in intervention effectiveness. Digitally delivered interventions are often more cost-effective and scalable compared to traditional pen-and-paper or experimenter-led versions. However, studies have also shown that experimenter-led interventions tend to be more effective (Wang et al., 2021). This highlights the importance of considering the tradeoff between scalability and effectiveness when designing these activities. However, technology has moved beyond just being a convenient dissemination method of interventions, and can also be used to personalize, enhance, and add additional supports to an otherwise static intervention. Personalized SRL interventions (Lim et al., 2023), interventions using digitally generated feedback (Afzaal et al., 2024), and interventions supported by learning analytics (Heikkinen et al., 2022), are all examples of technology being used to enhance an SRL intervention, adding additional value and making them more effective. An example of personalized SRL support being implemented can be seen in a study by Teich et al. (2024), in which personalization was implemented in an online learning course. In this study, students were offered personalized SRL support in the form of individual learning timers and recommended learning paths based on their profile and prior knowledge. This study found that students who used the adaptive supports more often exhibited higher SRL skills by the end of the study, whereas those who did not use them exhibited a decline in certain SRL behaviors over time. Although these kinds of supports are not always simple to implement, this study shows they can be highly effective. As technology continues to evolve, these supports are likely to become more commonplace. Therefore, it is important to have an overview of what kinds of technology enhancements currently being used in goal-setting activities and to assess their effectiveness.

2.2.4 What kinds of goals are students prompted to set?

The fourth and final set of study characteristics examined in this review are those pertaining to the characteristics of the goals students are being prompted to set. These characteristics represent the most commonly manipulated variables in goal-setting interventions, covering goal type, goal topic, timeframe, and additional SRL elements. Goal type refers to the content of the goal students are asked to set, with literature often focusing on goal types such as performance goals and learning goals. Performance goals are goals which refer to some standard to be met at the end of the goal striving period, while learning goals are goals which focus on obtaining a skill or set of knowledge or undergoing a specific process during goal striving. These two goals are often studied as being opposites (Cheng, 2023). Research suggests that it is more effective to prompt students to set learning goals, rather than focusing solely on performance goals (Kim et al., 2021). However, goal type extends beyond performance and learning goals, and another commonly referred to goal 'type' in literature is SMART (i.e., specific, measurable, achievable, realistic, time-bound) goals. SMART goals are different from performance and learning goals, in that they provide a set of characteristics to strive to include when setting a goal. Performance and learning goals can both be SMART goals although literature usually examines SMART goals as a standalone goal type. SMART is not strictly a goal type but rather a goal setting strategy, methodology, or set of goal characteristics. Despite not strictly fitting the role of goal type, SMART will be examined in the context of goal types in this review since it focuses on the content of the goal which students are prompted to set, and literature examining SMART goals often approach this methodology similarly to other goal types. Emerging research on SMART goals suggests that this can be a highly effective method of prompting students to set goals (Bahrami et al., 2022). Given the large body of research on goal type, with the results varying largely both within and across domains, it is important to understand the current state of the literature in higher education on this topic by reviewing existing literature to gain insights into the most effective types of goals within this field.

While goal type may be most discussed in the literature, it is not the only important goal characteristic which differs between studies. Timeframe of the goal refers to how far the end point of the goal should be from the moment when it is set. Within educational settings, goal-setting activities can range from setting immediate session-based goals, all the way to multi-year academic career-based goals. Research seems to suggest that short-term goals are more effective than long-term goals, and that a mixture of the two can also have positive results, especially during complex tasks (Latham and Seijts, 1999; Manderlink and Harackiewicz, 1984), but the results are mixed and findings from other domains may not hold in the unique higher education environment. However, the timeframe of a prompted goal within a goal-setting intervention is often a product of the context about which goals are set. For example, goals prompted about study sessions are inherently short-term, while goals set about a degree program are long-term. This connection between timeframe and goal context means that interventions may often make a decision about goal context, without considering how it may tie goals to an ineffective timeframe. Studies have suggested hierarchical goals may be an effective way of dealing with this, where longer term goals are broken down into short-term task focused goals (Weber et al., 2021a), but more information is needed to understand the current practices within the field. In this review goal distance will be discussed as a byproduct of goal context given a low number of studies explicitly considering it when designing and implementing goal-setting activities.

The final goal characteristic is the presence of additional SRL elements prompted during the goal setting task. While goal setting alone can be implemented, combining goal setting with planning, monitoring, or reflection elements is also a common branch of literature, in which the expansion of the goal-setting activity to other SRL phases aims to improve the overall effectiveness of the activity (e.g., Lertladaluck et al., 2023; Scheithauer and Kelley, 2017). Studies have shown that goal setting that is not followed by behavior change, runs the risk of failing to translate intentions into action, and that planning, as well as monitoring and reflection, may play an important role in this transition from goal intentions to goal focused activities (Wang et al., 2021). Thus, prompting or supporting the next stages of

the SRL cycle forms a continuation of the goal setting process through goal striving, and it is important to understand how existing studies address and carry out this additional level of support.

2.2.5 Why are students prompted to set goals?

While goal setting is an established means of improving performance across many different domains, there is not always a single intended point of improvement when discussing goal setting within higher education settings. Studies implementing goal-setting interventions aim to improve a variety of different outcomes, including academic performance (Hao et al., 2016), retention rates (Schippers et al., 2015), ADHD symptoms (Scheithauer and Kelley, 2017), and procrastination (Patria and Laili, 2021). However, many studies which implement a goal-setting activity do not do so in order to test its effectiveness, but rather to explore the content of student goals (Nurjannah et al., 2020), understand how goal setting relates to other student characteristics (Zhang et al., 2017), or in an attempt to explore the underlying process and mechanisms of goal setting itself (Hadwin and Webster, 2013). While these aims all add important information to the growing body of literature on this topic, understanding why researchers are studying goal setting within higher education contexts and what outcomes they are hoping to achieve with their interventions is an important first step to eventually being able to create guidelines for how, and in what contexts goal setting can be most effectively implemented in higher education settings.

2.3 The current review

With this systematic review, we aim to gain an overview of existing literature on goal setting within higher education. We will focus on understanding for how, why, and when goal setting has been carried out in higher education in prior literature. The research questions are formulated as follows:

1 In which populations and contexts has academic goal setting been carried out in higher-education settings?
2 How are academic goal-setting activities implemented in higher education settings?
2.1 How has technology been used to deliver, support, and enhance goal-setting activities in prior studies?
3 What are the characteristics of the academic goals that students are prompted to set in higher-education settings?
4 With what aims and focusing on what outcomes has goal setting been carried out in higher-education settings?

3 Method

A systematic search was carried out using the guidelines laid out in the Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA) statement (Page et al., 2021) in January 2024. This search consisted of several different stages. Firstly, a search using the SCOPUS database was carried out. Following this step, a forwards and backwards search was done based on key papers included in the initial search results. The final step in the search process addressed the problem of gray literature by doing an additional search of some other databases, to ensure any unpublished, or nontraditional work had been located. This search included Open Access Theses and Dissertations (OATD) and Networked Digital Library of Theses and Dissertations (NDLTD) databases containing doctoral theses, and the Bielefeld Academic Search Engine databases covering a range of open access research material. The search parameters mentioned below were used in the database searches. These parameters were kept broad to correct for the fact that there is a wide range of terminology used when discussing goal setting, and more narrowed search parameters failed to pick up many key papers in the field, highlighting the need for this broader search.

> *"TITLE-ABS-KEY ("Goal Setting" OR "Setting Goals" OR "Set Goals") AND TITLE-ABS-KEY ("Higher Education" OR "University" OR "College" OR "Graduate" OR "Undergraduate") AND PUBYEAR > 2009 AND PUBYEAR < 2025 AND (LIMIT-TO (PUBSTAGE, "final")) AND (LIMIT-TO (LANGUAGE, "English"))."*

A total of 1,387 papers were found after carrying out the search steps mentioned above. The selection process was then carried out, to identify papers that fit the two main selection criteria: (1) studies carried out with higher education students as the participants, and (2) participants were asked to set their own academic goals. These criteria aimed to capture both experimental studies where goal setting was carried out as an intervention intending to testing its effect, as well as non-experimental studies in which goal setting was carried out for other purposes. A detailed overview of the selection process can be found in the PRISMA diagram presented in Figure 1. In the first phase of screening, the titles and abstracts of the papers were used to identify to what extent the studies matched the inclusion or exclusion criteria. During this phase 1,127 papers were excluded, leaving 260 remaining. During the second round of the screening process, the full text of the remaining papers was screened by one of the authors, with 202 more papers being excluded during this step. Of the final 58 papers, two were coded as two separate studies (Bowman et al., 2019; McCardle et al., 2017) as they included two studies with different experimental setups, leaving a final selection of 60 studies, included from 58 papers.

3.1 Academic goal setting and exceptions

The focus of this review is to examine papers in which higher education students were asked to set academic goals, with this being one of the primary inclusion criteria of the initial search. This criterion aimed to exclude a large body of literature which used personal goal setting in higher education students to target outcomes like wellbeing (Wang et al., 2022), physical activity (O'Donnell et al., 2014), or sleep quality (Chu et al., 2018). However, during the initial search, a small but robust selection of papers were uncovered which implemented a goal-setting intervention asking students to set personal goals with the intention of improving academic performance or outcomes. This selection of studies mostly used similar interventions based on Morisano et al. (2010) or Schippers et al. (2015), with some forms focusing entirely on academic goals and others prompting personal alongside academic goals in their interventions. Given the fact that these interventions all focus specifically on improving academic performance and form an important and often cited selection of papers within this field, the decision was made to include them in the final set of studies for this review, despite the fact that some papers did not fully meet the inclusion criteria to focus entirely on students setting academic goals.

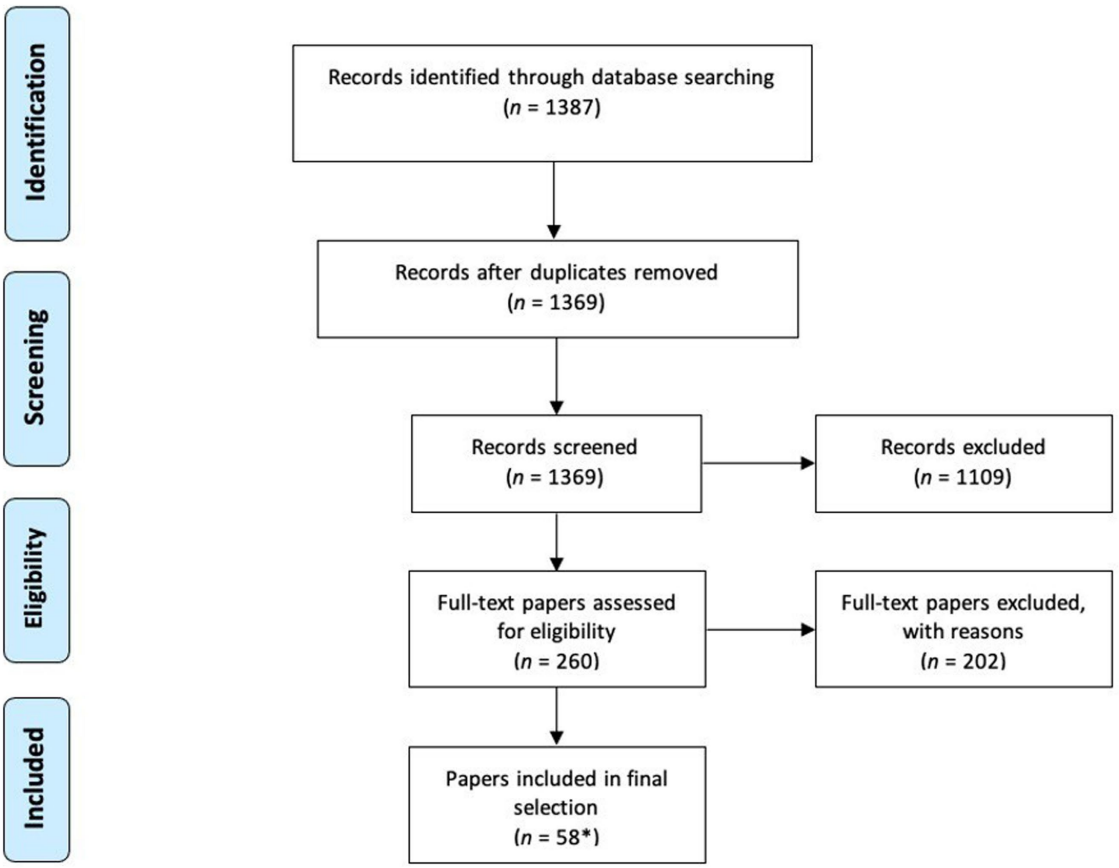

FIGURE 1
PRISMA flow diagram showing the literature search and selection procedure.

3.2 Analytical procedure

The coding of the final selection of papers was carried out by one of the authors. To ensure the reliability of this final coding scheme, two of the authors first coded a random selection of 10 papers, which included 12 studies. A single study was excluded with reasons during this step, leaving a total of 11 studies for the interrater reliability coding. Interrater reliability for each of the categories had a Cohens kappa ranging from 0.633 which is considered moderate agreement (McHugh, 2012) to 1.000 which is perfect agreement. The average Cohen's Kappa across all categories was 0.885. After completing the interrater coding, points of disagreement were discussed between the authors and a final code was chosen, to ensure reliability moving forward with the remaining coding. A full list of papers included in the final sample of this review can be found in the Supplementary materials.

4 Results

4.1 In which populations and contexts has goal setting been carried out in higher-education settings?

Table 1 provides an overview of the population and contexts in which goal setting has been carried out. The results show a diverse array of populations and contexts where goal-setting activities have been implemented in prior literature. Studies are distributed fairly evenly across North America, Asia, and Europe, with a smaller group being carried out in Oceania. This shows that goal setting has been carried out in a wide array of countries, which represent many different cultural contexts and educational systems, showing the wide appeal and interest in this topic and how it can be practically implemented to support higher education students.

Regarding academic discipline, a fifth of the reviewed studies did not clearly report the discipline of the study participants. The remaining studies suggest that goal setting studies have not been isolated to any specific group of students and have been carried out across a wide variety of disciplines, and often across multiple disciplines within a study. However, it is also clear that goal-setting activities are particularly common in health and medical sciences contexts, accounting for nearly one-fifth of all papers reviewed. This may be explained by the fields high study load, and the high need for student autonomy, and SRL skills (Foong et al., 2021; Zhang et al., 2022), which leads to increased interest in developing and testing support tools and interventions to help students set and achieve better goals. Overall, these findings show that goal setting has been tested in domain specific environments, as well as in more general environments with participants from multiple disciplines.

The findings showed that goal setting has been carried out targeting three distinct groups namely (1) general population, (2) low performing

students, (3) special needs population. Accounting for 90% of all studies, most goal setting was carried out with students from the general population. An small group of three studies focusing on low performing students, and the remaining three focusing on special needs groups of students. This final group of three studies focused on special populations included one study on students with executive functioning difficulties (Rivera et al., 2019), one study on students with ADHD (Scheithauer and Kelley, 2017), and one study focused on student athletes experiencing burnout (Dubuc-Charbonneau and Durand-Bush, 2018). While looking at these special groups provides interesting insight, the focus on general populations shows the broad appeal of goal-setting activities and supports the implementation of these kinds of activities in general higher education populations.

Finally, we looked at the context in which students were asked to set goals. This includes whether goal-setting activities were built into their academic course work or offered as extracurricular activities. The majority of goal-setting activities, accounting for 68.3% of the studies, were implemented as part of an academic course or task that students had to complete during their studies. For example, Dobronyi et al. (2019) embedded their goal-setting activity in a large undergraduate economics course. During this study, all students participating in the course were asked to complete the goal setting assignment, in exchange for 2% of their final course grade. In contrast, 21.7% implemented goal setting as part of a research experiment which students signed up to participate in, and 8.3% of studies implemented it as a part of an extracurricular support program. The study by Patria and Laili (2021) is an example of goal setting being implemented as part of a support program. In this study, goal setting was embedded in a thesis writing support program called GROWTH, in which students met for a training session in which they learned about how to set goals, and then met for four writing sessions, one part of which was keeping a learning diary and setting weekly writing goals. In comparison, Weber (2022) did not embed the goal-setting activity in any kind of educational or support program but rather in a research participation activity. In this study students were invited from all over the university to participate as a part of a research study in which they would activate a module in their LMS via which they could complete a goal-setting intervention.

Overall, there is a strong focus on goal-setting activities embedded in courses, with students being asked to set goals as part of the course in general, or in combination with a specific course assignment or task.

TABLE 1 Overview of study population and contexts.

Category	Number of valid studies (%)
Location of study	
North America	20 (33.3)
Asia	15 (25.0)
Europe	13 (21.7)
Oceania	3 (5.0)
Unclear	9 (15.0)
Academic discipline of participants	
Various/multiple	18 (30.0)
Medicine & health sciences	10 (16.7)
Social sciences & humanities	8 (13.3)
STEM	7 (11.7)
Business & finance	5 (8.3)
Unclear	12 (20.0)
Participant selection subgroups	
General population	54 (90.0)
Special needs population	3 (5.0)
Low academic performing population	3 (5.0)
Goal setting context	
Embedded in a course	41 (68.3)
Research participation context	13 (21.7)
Support program	5 (8.3)
Other	1 (1.7)

An overview of the number of papers coded for each of the categories: Location of Study, Academic Discipline, Participant Selections and Context.

4.2 How are academic goal-setting activities implemented in higher education settings?

Table 2 shows an overview of the implementation of goal-setting activities in higher education settings. Over half of the studies use a basic prompt when asking students to set goals, meaning students are not given extensive instructions as to the kind of goals they should set, and no additional training is included. Instead, they are given one or two sentences prompting them to set a goal with no additional information. An example of this can be seen in the paper by Clark et al. (2020), in which students were asked to either set a target grade for each of the exams in a course, or to set a target for the number of practice assignments they wanted to complete before the exam. In both conditions students were prompted for the specific goal, but no other instructions, or training was provided.

Extended or multi-step prompts account for one fifth of the examined studies, and often include extensive writing activities as part of the goal setting process, prompting students to undergo multiple steps in the goal setting process, providing several prompts regarding what participants should do, and what kind of goal information they should include. Many of the life goals goal-setting interventions included in this sample fall into this category as can be seen in the study by Morisano et al. (2010). In this study, students were guided through an 8-step, 2.5-h intervention in which they reflected on their ideal future and values, set personal and academic goals, and then created plans to achieve them. Each step included prompting and explanation to guide students through the process.

The final type of goal prompting is goal setting and training module, accounting for 15.0% of papers. In this kind of prompting, students were first trained on the topic of effective goal setting, and the importance of goal setting, before being prompted to move through the process themselves and set goals. An example of this is the study by Patria and Laili (2021). The goal-setting activity in this study consisted of a single training session teaching students how and why they should set goals, followed by four group writing sessions in which students set writing goals for themselves during each session. Only one study included multiple types of prompts (Kochekseraii,

2019), the different prompts were carried out as similar goal-setting activities across two different cohorts.

As for the number of goal setting opportunities included in the study, about two thirds of the studies offered a single goal setting opportunity, with about one third including multiple different goal setting opportunities. Single session goal-setting interventions had students set goals only on one occasion, although the number of goals students were prompted to set during that single occasion could vary. Multi-session goal-setting interventions asked students to set at least goals on at least two different occasions.

4.2.1 How has technology been used to deliver, support, and enhance goal-setting activities in prior studies?

Table 3 shows an overview of the delivery methods used for the goal-setting interventions. Despite the importance of this element, one third of the studies examined did not explicitly mention the delivery method of the goal-setting activity. Konradt et al. (2019) was one of the four pen & paper interventions. In this study, students were given an envelope at the start of the study with the instructions for the study, and 14 daily questionnaires they needed to carry out with half the group receiving 14 "three good things" activities, and half the group receiving 14 goal-setting activities. Participants then had to return the 14 completed questionnaires at the end of the study.

The three studies using verbal delivery were carried out by experimenters or student mentors. For example, in van Lent and Souverijn (2020), student mentors were instructed on how to prompt students to set goals during their mentorship sessions, with some mentors receiving additional instructions to prompt students to raise the difficulty of their goals after setting them.

While delivering goal-setting activities digitally seems a popular method, it is important to distinguish between papers that used technology to only deliver an intervention, and studies which use technology to enhance or otherwise improve an intervention in a way which could not be achieved using non-digital tools. While digitally delivered interventions account for more than half of the overall studies, only six of those detailed some form of additional technological enhancement. The digitally delivered goal-setting activities mostly consisted of goal-setting activities delivered via questionnaire software, or to be included in a digital portfolio system. An example of this can be seen in Hao et al. (2016), where students had to create digital portfolios alongside two in-class projects, with the posting of weekly goals being one of the requirements of the portfolio task.

The digitally enhanced goal-setting activities used technology to add features or support which could not be implemented in a static pen and paper activity. In four of the digitally enhanced interventions, technology was used to provide students with personalized feedback either on their goals, or on their performance. For example, Chu et al. (2023) used a game-based learning environment to help students learning English improve their vocabulary. Within this game environment, students set goals for their intended performance, and as they played the game, they were provided with feedback depending on their initial goal compared with their actual performance. Weber et al. (2021b), guided students to set initial goals, and then provided a system through which they could expand on their goals in a hierarchical manner, breaking larger goals down into smaller component parts and eventually creating a full tree diagram representing an expanded hierarchical goal. Students were then prompted to complete a Goal Characteristics Questionnaire and were given feedback on how their goals scored and what the relevance of these scores was. Louvignè et al. (2015) also used technology to provide feedback by having students set goals in their digital environment, and then showing students recommended goals from other participants which were either similar or different from the students' original goal and allowing students to use these recommendations to adapt their goals as desired. The final technologically enhanced goal-setting activity was a Facebook-like feed created by Rees Lewis et al. (2018) where students could set their goals, share them with team members and mentors, and receive feedback from them.

In summary, while the majority of papers use technology mainly as a delivery method for goal-setting activities, several use technology for additional enhancements, mostly focusing on generating automatic feedback or creating sharable goals allowing for feedback from peers and teachers.

TABLE 2 Overview of implementation of goal-setting activities.

Category	Number of valid studies (%)
Type of goal setting prompt	
Basic prompt	33 (55.0)
Extended/multi-step prompt	12 (20.0)
Training module & prompt	9 (15.0)
Multiple types	1 (1.7)
Unclear	5 (8.3)
# of Goal setting opportunities	
Single	41 (68.3)
Multiple	19 (31.7)

An overview of the number of papers coded for each of the categories: Type of Goal Setting Prompt, and Number of Goal Setting Opportunities.

4.3 What are the characteristics of the academic goals that students are prompted to set in higher education settings?

Table 4 provides an overview of the characteristics of the academic goals that students are prompted to set. The three academic goal characteristics refer to the type (or content) of the goal they were asked to set, the context about which they were asked to set goals, as well as the presence of prompting related to additional SRL elements. Almost one third of the studies prompted general academic goals. Studies prompting general academic goals did not specify any specific kind of goal, just asking students to provide a goal for some kind of educational context, and not providing further requirements for the goal type. For example, the study by Bellhäuser et al. (2023), tested the effect of feedback on the quality of students SRL during a daily learning diary. Students were provided with learning diary with two prompted SRL activity to complete each day about their studies. During the morning two prompted SRL activites, students were prompted to set general (unspecified) academic goals using the prompt "Today, I am setting myself the following study goals:" (Bellhäuser et al., 2023, p. 7).

Another group of studies included an even split across performance goals (15.0%), learning goals (15.0%), and SMART (specific, measurable, achievable, realistic, timebound) goals (15.0%). Papers

TABLE 3 Overview of the delivery methods used for the goal-setting activities.

Category	Number of valid studies (%)
Goal-setting activity delivery method	
Digital	
Digital delivery only	25 (41.7)
Digital enhancement/support	6 (10.0)
Pen & paper	4 (6.7)
Verbally	3 (5.0)
Multiple	2 (3.3)
Unclear	20 (33.3)

An overview of the number of papers coded for the category Goal-Setting Activity Delivery Method, as well as the subcodes, exploring types of digital support.

within these categories explicitly prompted students to set a specific type of goal during the goal-setting activity. The performance goals were often in the form of asking students to set a 'grade goal' for a specific exam or course, while learning or SMART goals were explicitly prompted in nine studies each. Life goals were prompted in 10.0% of studies, and were present in interventions offered in academic contexts, but offering students the ability to set both academic and non-academic goals such as in Schippers et al. (2020) or Morisano et al. (2010).

Another selection of five studies prompted multiple kinds of goals. These could be included in the same session, or in multiple different sessions, but generally aimed at achieving different things with different types of goals. For example, the study by Acee (2023) compared the effects of a goal-setting intervention with a values appraisal intervention. In the goal-setting intervention, participants were asked to select learning objectives from an upcoming exam and set goals relating to their chosen learning objectives. Students were asked to set four goals for each learning objective including "two goals for what to study and two goals for how to study" (Acee, 2023, p. 304).

Overall, the majority of the studies prompted general academic goals, allowing students to set any type of goal they wanted, or multiple different types of goals, with the remaining papers being fairly evenly spread across the specific goal types.

4.4 With what aims and outcomes has goal setting been carried out in higher education settings?

Figure 2 illustrates the type of aims and outcomes of goal-setting interventions. The first group of studies is those which are studying goal setting as an intervention, with the intention of testing the effect of goal setting on academic performance. Only 17 of the studies examined in this study fit into this category, generally measuring the effect of goal setting on exam grades, task performance, or GPA. The results of these studies are mixed, with six of the 17 studies finding that goal setting had a positive effect on academic performance, six finding mixed effects, four finding no significant effect, and one comparing the effects of two different kinds of goals but not goal setting in general. A group of two other intervention studies explored the effects of goal setting on some other outcome variable including procrastination (Patria and Laili, 2021) and self-leadership skills (Konradt et al., 2019), with both studies reporting a significant positive effect of goal setting.

TABLE 4 Overview of the characteristics of the academic goals that students are prompted to set.

Category	Number of valid studies (%)
Type of goal	
General academic goal	13 (21.7)
Learning goal	9 (15.0)
SMART goal	9 (15.0)
Performance/grade goal	9 (15.0)
Life goal	6 (10.0)
Other	5 (8.3)
Multiple	5 (8.3)
Unclear	4 (6.7)
Goal context	
Course context	24 (40.0)
General academic context	18 (30.0)
Task/session context	9 (15.0)
Other	5 (8.3)
Multiple	1 (1.7)
Unclear	3 (5.0)
Additional SRL support	
Planning	9 (15.0)
Monitoring	3 (5.0)
Reflection	10 (16.7)
Multiple	15 (25.0)
None	21 (35.0)
Unclear	2 (3.3)

An overview of the number of papers coded for each of the categories: Type of Goal, Goal Context, and Additional SRL Support.

The six interventions which found mixed effects can be explained in several ways. For example, Clark et al. (2020) found that task-based goals had a significant positive effect, whereas the effect of performance goals was insignificant. Furthermore, they found a difference in the effect of task-based goals on male students, who had a significant increase in performance, and female students, who showed no change in performance. Similarly, Roy and Saha (2019) found that task-based goals had a positive effect on performance, but performance goals had no effect. In the first study in the paper by Bowman et al. (2019), they found that their goal setting-based intervention seemed to have no immediate effect on performance but did suggest a delayed increase in performance in subsequent years. The second study reported in this paper found that goal setting had no effect on first year students but had a significant positive effect on students in their second year or above. Chase et al. (2013) found that goal setting alone had no effect but had a significant positive effect on performance when combined with personal values exploration, whereas van Lent and Souverijn (2020) found that goal setting alone had a significant positive effect on performance, but had no effect when students were prompted to increase their goal after setting it. Overall, these studies showing mixed effects support the notion that goal type, population, and additional supports may impact the effectiveness of goal setting interventions.

Studies that examined the effect of goal setting only account for about one-quarter of the included studies, and goal setting was

implemented for several other reasons. For example, seven papers implemented goal setting as only a small part of a larger study, not testing the effects of goal setting independently, but instead exploring other variables or effects in the analysis.

However, more than half (56.7%) of the papers were non-intervention studies, implementing goal-setting activities for purposes other than testing their effect on performance. These papers include examining goal setting to understand their characteristics or quality (e.g., Heim and Holt, 2021; Nurjannah et al., 2020), or to correlate goal characteristics with other student characteristics (e.g., Abraham et al., 2019; McCardle et al., 2017). An example of this can be seen in the study by Dubuc-Charbonneau and Durand-Bush (2018), which tested the effects of an SRL intervention on student athletes experiencing burnout. This intervention began with a goal-setting activity, but continued to teach SRL strategies, explore stressors and create plans for avoiding or overcoming them, and included an extensive journaling program. This study took the form of a multiple-case study design, with the results being explored at the level of the whole intervention; as such, no conclusions can be drawn about the specific role of goal setting in any specific outcomes. While this group of non-intervention studies makes important contributions to the field about the goal setting process, these studies cannot be used to make any claims about the effect of goal setting on student behavior or academic performance.

4.4.1 Studies investigating the effect of goal setting on academic performance

To provide insight into combinations of the various populations, contexts and characteristics of goal-setting activities and the effects of goal setting, we selected the studies which tested the effect of goal

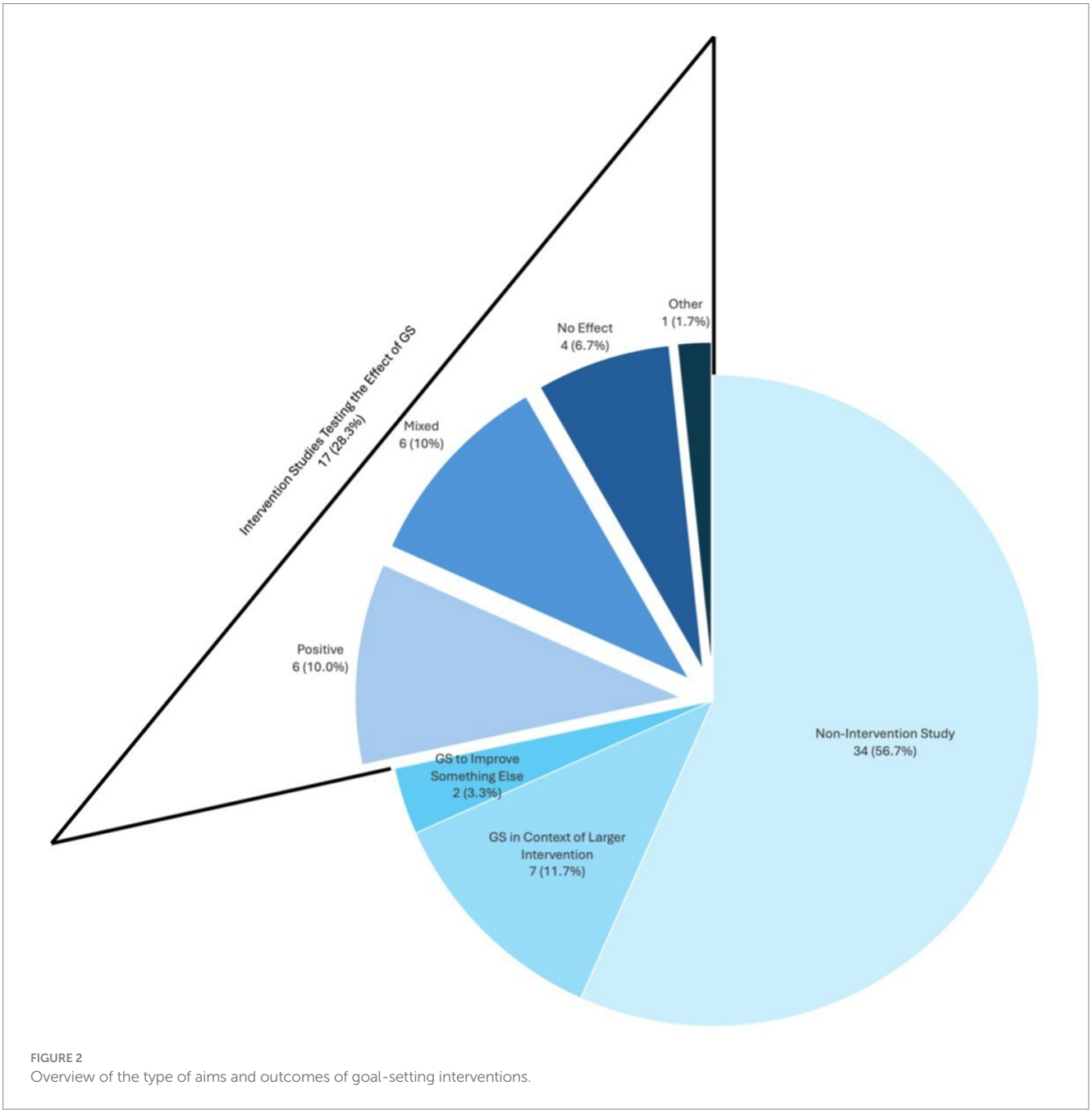

FIGURE 2
Overview of the type of aims and outcomes of goal-setting interventions.

setting on academic performance and compared those which reported positive results and those which reported mixed, negative, or no effect. Table 5 provides an overview of these 17 studies. This table highlights the highly heterogenous nature of the papers examined, making for extremely wide range of results, with few obvious clusters and differences between outcomes. The majority of the studies testing the effects of goal setting on performance were tested in general student populations and embedded within courses. Almost all the activities included a single opportunity to set goals, and delivered the activity digitally, with no other obvious digital enhancements or support. However, the type of prompts, types of goals, and prevalence of additional SRL supports differ between studies, and have no clear relationship with the outcome of the studies. Overall, of the six papers which found positive results, three included basic prompts, and three included extended prompts, although none included any form of training. Extended prompts were generally in the form of long-form writing exercises, in which participants were prompted through a series of goal setting tasks over a multi-hour activity (e.g., Morisano et al., 2010; Schippers et al., 2020). 50% of these papers prompted students to set life goals, while 33.3% of them prompted students to set performance goals. All papers included some additional form of SRL prompting, with five of the six papers including additional goal planning steps alongside the goal setting, and the final paper including multiple additional SRL elements.

Overall, these findings highlight the extremely flexible nature of goal setting, showing that it can be implemented in many different forms and contexts. While the results tend toward showing a positive effect of goal setting, some papers find no effects, or effects only in specific populations. While these results do not point to a specific framework for creating an effective goal-setting activity, and rather seem to show that goal setting can be broadly effective in a variety of different contexts, they do indicate the need to empirically examine whether any goal-setting interventions have the intended effect when implemented in classroom and research settings.

5 Discussion

Goal setting is a critical process in SRL (Panadero, 2017). However, given that goal setting can be implemented in a myriad of ways, there seems to be little consensus on how best to support students in setting academic goals. With this systematic review, we aimed to understand how goal-setting interventions have been designed and implemented in previous studies carried out in higher education institutions. Four main research questions revolving around the topics of who, what, how, and why higher education students have been asked to set academic goals in prior studies are addressed.

The findings for research question one (i.e., where) indicates substantial interest in the subject of goal setting within higher education, evidenced by studies conducted globally and across various educational disciplines. However, despite this wide variety of goal setting studies there is little focus on the cultural differences in goal setting practices, which literature from the organizational field has found can have a significant effect (Audia and Tams, 2017). The high number of studies from populations in the medical and health sciences highlight the significance of goal setting in challenging fields that require high levels of student autonomy. However, despite this focus, there is a range of papers from many different fields, showing its wide applicability regardless of student's area of study. Furthermore, while some studies have suggested that goal setting may be most effective in at-risk populations (Morisano et al., 2010), this review found that there is still a focus on general population students within the literature. However, general student populations are still highly diverse with students with varying levels of motivation and SRL skills which could affect their abilities to benefit from goal setting, or general SRL support tools. Therefore, a point of interest for future research may be to explore the effects of generalized and personalized supports in this population, to understand what types of support offers the most benefits across the various groups of students. Additionally, there is a need for more cross-cultural research, exploring how goal setting practices differ across cultures, and how aims and values of different educational systems influence this process.

In contrast with critiques in other domains, where reviews have found an overreliance on laboratory settings, potentially limiting the external validity of the findings (Kleingeld et al., 2011), most of the papers examined in this study embedded goal-setting activities within higher education courses. This focus on naturalistic study settings enhances the practical relevance and applicability of the research outcomes and is a strong point of the research on goal setting within the higher education domain. However, it also underscores the need for scalable goal-setting interventions that do not rely on teachers or researchers to carry them out in larger populations.

Altogether these findings suggest wide applicability of goal-setting activities as support tools within higher education. Existing research covers a broad base of geographical, cultural, and study populations, and does not indicate any specific populations in which to limit the application of goal setting.

Research question two (i.e., how) explored how goal-setting activities have been prompted and carried out, as well as a sub-question exploring the role of technology in these activities. The results showed a strong focus on digitally delivered activities, following a trend in interventions across many disciplines in moving toward digitally delivered activities which are more cost and resource effective, as well as easily scalable (Agrawal et al., 2014; Warriem et al., 2022). However, surprisingly, there were few examples of technology being used to enhance or support the interventions further. The few papers using technological enhancement largely focused on automatic feedback generation, which has been shown to be an effective manner of supporting SRL processes (Chou and Zou, 2020). However, the low number of papers making use of technology to extend their goal-setting activities shows there is room in the field to grow and explore how technology can be used to further enhance the effectiveness of these interventions. Technology also offers many avenues for further study relating to the personalization of goal setting tools to meet the needs of individual students. Recent work in the field of learning analytics has shown that using insights about student behavior, to offer adaptive or individualized support can be highly effective (Teich et al., 2024), and the application of this approach in the field of goal setting offers a wide array of opportunities. New developments in the field of AI have created a surge of interest in the use of large language models as a means of providing scalable, real-time feedback in educational support tools (Meyer et al., 2024; Stamper et al., 2024), and further research is needed to provide insight into how this can be applied to goal-setting activities to improve their effectiveness. Furthermore, this prevalence of technology within the goal setting literature highlights the need for an update to goal setting theory, considering the role of external and co-regulatory supports within the goal setting process.

TABLE 5 Overview of the intervention studies in which goal setting is carried out to improve academic performance.

	Location of study	Student population	Student area of study	Context of the GS activity	GS opportunities	Type of prompt	Delivery & enhancement	Type of goal	Goal context	Additional SRL supports
Positive effect of GS										
Chu et al. (2023)	Asia	General	Unclear	Embedded in Course	Single	Basic Prompt	Digital Enhancement	Performance/ Grade	Task/Session	Multiple
Kamp et al. (2014)	Europe	General	Health & Medicine	Embedded in Course	Single	Basic Prompt	Unclear	General Academic	Course Context	Planning
Morisano et al. (2010)	North America	Low Performing	Various	Research Participation	Single	Extended Prompts	Digital Delivery	Life Goal	General Academic	Planning
Schippers et al. (2015)	Europe	General	Business & Economics	Embedded in Course	Single	Extended Prompts	Digital Delivery	Life Goal	General Academic	Planning
Schippers et al. (2020)	Europe	General	Business & Economics	Embedded in Course	Single	Extended Prompts	Digital Delivery	Life Goal	General Academic	Planning
Yusuff (2018)	Asia	General	Health & Medicine	Embedded in Course	Single	Basic Prompt	Unclear	Performance/ Grade	Course Context	Planning
No effect of GS										
Acee (2023)	Unclear	General	Unclear	Embedded in Course	Single	Extended Prompts	Digital Delivery	Multiple	Course Context	Multiple
Dobronyi et al. (2019)	North America	General	Unclear	Embedded in Course	Single	Extended Prompts	Digital Delivery	Life Goal	General Academic	Planning
Lertladaluck et al. (2023)	Asia	General	Unclear	Research Participation	Single	Training & Prompts	Digital Delivery	Other	General Academic	Multiple
van Lent (2019)	Europe	General	Various	Embedded in Course	Single	Basic Prompt	Digital Delivery	Multiple	Course Context	None
Mixed effects of GS										
Clark et al. (2020)	North America	General	Various	Embedded in Course	Single	Basic Prompt	Digital Delivery	Performance/ Grade	Course Context	None
Bowman et al. (2019) Study 1 & 2	North America	Low Performing	STEM	Support Program	Single	Basic Prompt	Unclear	General Academic	Course Context	Multiple
Roy and Saha (2019)	Unclear	General	Unclear	Embedded in Course	Single	Basic Prompt	Unclear	Multiple	Course Context	None
Chase et al. (2013)	Unclear	General	Social Sciences & Humanities	Research Participation	Single	Extended Prompts	Digital Delivery	SMART	General Academic	None
van Lent and Souverijn (2020)	Europe	General	Business & Economics	Support Program	Single	Basic Prompt	Verbal	Performance/ Grade	Course Context	None
Other results										
Dishon-Berkovits (2014)	Asia	General	Unclear	Embedded in Course	Single	Basic Prompt	Unclear	Multiple	Course Context	None

An overview of the coding results for all included intervention studies which tested the effect of goal setting on academic performance.

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Research question three (i.e., what) explored the characteristics of prompted goals. This revealed a highly heterogeneous field of research, which has drawn inspiration from both traditional goal setting theory, as well as newer theoretical approaches. Most of the activities relied on general academic goals without a specific type, however learning and performance goals also had a strong presence in the reviewed papers, similar to the interest in these goal types in traditional goal setting literature (Locke and Latham, 2013). These results highlight the relatively narrow exploration of goal types, focusing on the same high level goal types which are traditionally explored in goal setting literature. There is a need for future research examining more complex goal types which are specifically adapted for educational purposes, exploring sub-types of learning and performance goals which may be effective in these settings. Beyond performance and learning goals, SMART goals were used in an equal number of examined studies. SMART as a goal setting methodology has been previously studied, however the methodology seems to have its basis in more contemporary practical corporate goal setting practices (Swann et al., 2023). This beginning aside, it seems to be gaining popularity within research settings, with more than half of the papers including this type of goal having been published in the past 5-years. This indication of growing interest in the effect of this kind of goal is therefore a promising sign that more research should be carried out to provide theoretical backing as to the effectiveness of this methodology. However, its agreement with traditional goal setting research on the importance of goal specificity, suggests it has some overlap with existing goal setting methodologies, and further research could add to, and expand, our understanding of Goal Setting Theory (Locke and Latham, 2013).

Despite a lot of theoretical literature focusing on the effectiveness of performance and learning goals, many papers did not specify any goal type. This highlights the importance of having a solid theoretical grounding when designing goal setting tools. A prior review by Wong et al. (2019a) found that educational tools in the learning analytics field often lack a grounding in learning theories, and future research within the goal setting field should ensure to avoid this obstacle where possible by grounding new goal setting studies in existing learning theories and SRL literature.

Another element of this research question was the presence of support for additional phases of the SRL cycle. In total, more than half the examined papers combined goal setting with at least one other SRL activity (i.e., planning, monitoring, or reflections). While this approach deviates from traditional goal setting literature in the organizational psychology field which often focused on goal setting alone as a behavior change mechanism, it is very much in line with broader research from the SRL field, suggesting that combining SRL supports to cover multiple phases of the SRL cycle can improve their effectiveness (Prasse et al., 2024). Further research is needed to understand how goal setting plays a role in the SRL cycle, and how additional phases of SRL can be used to support effective goal setting. However, these findings highlight SRL as a strong potential basis for future goal setting literature, providing a more learning-focused perspective than more traditional goal setting theory literature, which may be better suited to the unique higher education environment.

Research question four (i.e., why) examined the purpose of goal setting in the examined studies, paying special attention to the design of goal-setting activities in intervention studies testing the effect of goal setting on academic performance. Most of the included studies in this review fell into two distinct categories: those prompting students to set goals so that they could examine the content of the goals, and those prompting students to set goals to examine the effect of doing so on academic performance. The former category forms an important body of literature within the field, contributing to the understanding of how students set goals, and what other characteristics affect this process. However, given how often these studies are carried out within classroom settings, understanding the effect of asking students to set goals is equally crucial, and is an area in which fewer studies have been carried out. This is in-line with reviews from other fields which found a lack of large RCT studies examining the effect of goal setting on various outcome measures (Bodenheimer and Handley, 2009; Jeong et al., 2021). Therefore, it remains challenging when attempting to derive practical guidelines as to how goal setting can and should be carried out in higher education classrooms. A better understanding of how effective different forms of goal setting are would allow for the creation of guidelines to design and implement effective goal-setting interventions in the future. This avenue of research, combined with insights from goal setting studies in other domains, could further the understanding of how to scaffold effective goal setting in higher education settings. Overall, this review found that results tended to be positive, or mixed, but there is a need for more RCT studies into the effect of academic goal setting on academic performance, with a special focus on clear and concise reporting as to the form and context of the goal-setting activities. Future studies should ensure they report not only on the context of the study, but also of the intervention being implemented, to ensure less ambiguity in future reviews, and to allow comparison across studies in a statistically meaningful way.

Taking all the papers reviewed into consideration, the heterogeneous nature of the goal-setting activities carried out across these studies, and the small number of intervention studies, provide little basis for creating set guidelines as to how to prompt students to set effective goals. Studies finding a positive effect of goal setting on academic performance mostly asked students to set life or performance goals about their studies in general (not a specific course or task) on a single occasion. However, none of these indicators were unique to studies with positive effects, and contrast with research stating that performance goals are not effective means of improving performance. Overall, the results seem to point to a more general effectiveness of the act of setting goals, rather than a specific form of goal setting alone being effective. Findings also showed a general focus on digital delivery of goal-setting interventions, but with room for future research on how to fully leverage technology to make use of the affordances it can offer during the goal setting process.

5.1 Limitations

There are several limitations to the current review. Firstly, the small sample size of this study was a result of strict inclusion criteria designed to capture papers that specifically examined academic goal setting. While this focus on academic goal setting aims to offer insights which can be used to build academic goal-setting activities in future studies, the small and highly heterogeneous selection of papers made it difficult to categorize activities together in order to draw conclusions about their effectiveness. Furthermore, there were inconsistencies across the papers in reporting details of the goal-setting activities with many studies not explicitly stating the context, or way in which the goal-setting activities were carried out. This highlights the need for more clarity in the way goal-setting interventions are implemented and

reported in research studies. Future research could aim to look at additional forms of goal setting (e.g., outside of academic goals), and see whether this wider scope can offer additional insight into the field of academic goal setting. The risk of publication bias is also a limitation of this paper. However, in order to address this possibility, the literature search was carried out not only using the SCOPUS database, but also in several additional databases aimed at capturing doctoral theses, unpublished work, or other non-traditional forms of research output. Further details on this process can be found in the method section.

5.2 Conclusion

This review offers insight into the state of literature which has been published on goal setting in higher education within the last decade. The results show that there is a lot of interest in the field, and there has been a lot of research exploring the wide range of uses of goal setting within higher education contexts. Findings of this research show that SMART goals are a promising avenue of research for future studies, as an expansion beyond traditional goal setting literature focusing on learning and performance goals, and future research could focus on combining SMART methods with learning and performance goals to examine whether this combination increases effectiveness. Furthermore, combining goal-setting activities with support from additional phases of the SRL cycle (e.g., planning, monitoring, reflection), seems to be effective, and more research is needed to fully understand the most effective approach to building these multi-phase SRL support tools. Integration of technology into goal-setting activities as more than a delivery method is rare within the literature, and expanding goal setting research to draw from literature on learning analytics and AI holds promise for future tools with more extensive adaptive and personalization features.

The findings of this review hold significant practical implications for researchers, educators, and policy makers who are exploring the implementation of goal setting in higher education settings. The results support the integration of goal-setting activities into higher education settings, given their wide applicability across diverse disciplines and student populations, and the mixed to positive findings. However, due to the highly diverse makeup of the higher education student population, as well as the gap in regard to individual differences in goal setting, it is important to consider where generalized or personalized goal setting supports may be most effective. Focusing on cross-cultural research is also essential to understand how goal-setting practices can be tailored to different cultural and educational contexts, ensuring effectiveness and inclusivity. This study also highlights that leveraging technology plays a crucial role in supporting goal setting. By incorporating tools like learning analytics and AI, it is possible to provide scalable, real-time feedback and adaptive support, which could enhance the general effectiveness of goal-setting interventions. There is also a clear need to support the development and implementation of technology-enhanced goal-setting tools that are grounded in solid theoretical frameworks, such as SRL theory. Additionally, establishing clear guidelines and reporting standards for goal-setting interventions will aid in synthesizing best practices and scaling successful programs.

Within the field of goal setting in higher education, the large array of studies currently available show a distinct interest in the topic, with goal setting showing promise as an effective means of supporting academic performance. With better reporting standards in future studies, as well as a focus on theoretically grounded interventions, future reviews will likely be able to focus on creating guidelines for effective goal setting supports in higher education, as the field continues to expand.

Data availability statement

The original contributions presented in the study are included in the article/Supplementary material, further inquiries can be directed to the corresponding author.

Author contributions

GMVJ: Conceptualization, Formal analysis, Writing – original draft, Writing – review & editing. JW: Conceptualization, Writing – original draft, Writing – review & editing. MB: Conceptualization, Writing – original draft, Writing – review & editing. MS: Conceptualization, Writing – original draft, Writing – review & editing. FP: Conceptualization, Writing – original draft, Writing – review & editing.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

The author(s) declared that they were an editorial board member of Frontiers, at the time of submission. This had no impact on the peer review process and the final decision.

Generative AI statement

The authors declare that no Gen AI was used in the creation of this manuscript.

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Supplementary material

The Supplementary material for this article can be found online at: https://www.frontiersin.org/articles/10.3389/feduc.2024.1511605/full#supplementary-material

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