REFLECTIVE PRACTICE

Using Penzu™ for academic online diaries to enhance metacognitive skills in Higher Education

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Abstract

Metacognition can be considered as knowledge about one's own cognitive activities and their regulation during learning processes (Flavell, 1979). Students are, then, involved in metacognitive mental activities when they think about what they have learned, how they have learned it, or how they can relate it to their personal experiences, among other things. Based on this, students who develop these skills should show more appropriate strategies to know what they need to find out or do while learning. Therefore, understanding and controlling these cognitive processes may be one of the most essential skills that teachers should encourage at all academic levels (Anderson, 2002).

The Guided Learning Diary (GLD, Bort-Mir, 2016) was developed as a learning diary with several aims: (i) defining the general and specific objectives of the content to be taught, (ii) developing the students' metacognitive skills through strategic questions, and (iii) promoting the development of important competences such as self-criticism, autonomous learning, self-evaluation and capacity for improvement. The GLD also allows a self-evaluation process for teachers, thus facilitating the supervision and improvement both of the contents of the course and the didactic methodology. This tool was developed and applied within the Theatre in English subject at Universitat Jaume I, embedded in the

third course of the English Studies Degree, and the students' results were significantly higher than those of previous years (Bort-Mir & Silvestre-López, 2017).

The present research proposes a technological turn in the application of the GLD with the use of the open-source tool PenzuTM. The creation of academic online diaries with this tool may improve students' motivation while promoting meaningful and self-regulated learning in Higher Education environments, thus helping students reach academic success. PenzuTM allows this investigation to widen the scope of the GLD to the general public.

Keywords

ICT, self-regulated learning, metacognition, online pedagogic tools, Penzu.

1. Introduction

John Flavell (1979) was the first scholar to define the term 'metacognition' as the knowledge that people possess about their own mental activities and their ability to regulate them during learning processes. Such an assumption implies that students are subconsciously putting their metacognitive abilities into practice when they reflect about what they learn, how they learn, or even when they relate all the learnt content to their real-world experiences. These reflections entail being conscious of their own thoughts, perceptions, and feelings about their learning processes (Bort-Mir, 2016). Thus, the development of these metacognitive skills may help students have better learning strategies, allowing them to know what they need to improve or do to reach a more fruitful learning, a process that results (hopefully) in academic success. It is then obvious to conclude that teachers should include in their teaching practices several activities that help raise awareness of these metacognitive skills (Anderson, 2002), a premise supported also by Oz (2015), claiming that the ability to self-regulate cognitive processes while learning is highly significant for appropriate knowledge acquisition.

Learning strategies are defined by Martín (2012) as intra-psychological mechanisms that derive in mental activities with a primary goal: to manage one's personal resources in order to reach a learning objective. The author also claims that these learning strategies are multidimensional, that is, they entail different processes such as cognitive, metacognitive, motivational, and/or resources management. In order to decide how to apply these strategies and when, students should progressively acquire a conscious control over their use.

Self-regulated learning (Zimmerman, 1989) is, consequently, understood as one of the best ways to foster learning, and it is defined as a kind of learning that is guided by students' metacognitive skills, their learning strategies, and their motivation to learn, that is, self-regulated learning is a process in which students take control of what they learn and how they learn it, thus being able to assess and also improve their acquisition of content. As a way of fostering this type of learning, Zimmerman (1989) proposed a list of self-regulated learning strategies (see Appendix I) to be checked by learners so that they could become aware of their own learning process, including self-evaluating, organizing and transforming, goal-setting and planning, seeking information, keeping records and monitoring, environmental structuring, self-consequating, rehearsing and memorizing, seeking social assistance, and reviewing records.

Like Zimmerman's strategies, Schraw and Dennison (1994) proposed their Metacognitive Awareness Inventory (MAI, included in Appendix II), a list of fifty-two statements with the aim of helping students become aware of the metacognitive abilities that they mentally use during learning activities. The inventory shows a high degree of similarity to Clark's can-do scales (1985) about language learning proficiency. According to Clark, these can-do scales are "descriptions of expected outcomes or impressionistic etchings of what proficiency might look like as one moves through hypothetical points or levels on a developmental continuum" (Clark, 1985: 348). Can-do scales derived later into Kitano's

(2001) can-do lists of tasks that learners could do regarding the correct use of the learnt language. These lists have the aim of reducing anxiety during oral activities. Such lists, in turn, can be considered similar to Schraw and Dennison's MAI (1994). They are seen as a way of making students aware of the way they learn and of their need for improvement.

Motivating students within the learning environment is key for their academic success, and one way to feed motivation in the classroom is fostering meaningful learning (Salvador, 1990). It was Ausubel (1983) who first proposed the theory of meaningful learning, a theory that deals with the process of meaning creation along the student's learning journey. Meaningful learning implies that students connect the new content they are about to learn with what they already know to later associate this new content with their own real environment (Martín, 2012). This process of connections among content to be learnt fosters the relation between new information on the one hand, and elements that already exist in the student's cognitive structure on the other hand, consequently leading to a more relevant learning that will remain in the long-term memory (ibid).

It is important to note that students' motivation can also be cultivated through the use of other techniques or materials, as is the case with the use of technology in the classroom. According to Mansor (2007), using technology to promote learning increases students' motivation, thus impacting very positively on their academic achievement. Research in the way technology should be implemented and used to enhance language teaching and learning, for instance, has increased in the past years (Brodskaya & Thiele, 2004; Wong, 2004; Timucin, 2006; Hixon, 2008), claiming that the use of technology in the classroom is not only effective but it also assists in the development of teaching methodologies (Frigaard, 2002; Schofield & Davidson, 2003).

The present paper aims at presenting the use of the online application Penzu™ as a means of fostering motivation and self-regulated learning through the development of academic online diaries based on the GLD (Diario de Aprendizaje Guiado, Bort-Mir, 2016, translated into English as Guided Learning Diary).

2. The Guided Learning Diary (GLD)

2.1 What is the GLD?

The GLD is a tool developed by Bort-Mir (2016) to promote the conscious development of metacognitive skills among students within Higher Education contexts. The tool was applied to the subject Theatre in English, part of the English Studies Degree at Universitat Jaume I, Castellón, Spain. It was developed as a document, a kind of diary or portfolio that was created through the university's virtual classroom and that should be filled in by students throughout the course.

The GLD must incorporate different sections, one section per each of the units from the subject to be taught. Each section, that is, each unit, is composed of a series of questions and statements to be checked specifically designed by the teacher with the aim of consciously fostering the student's metacognitive abilities in a multidimensional fashion (Martín, 2012).

2.2 What does the GLD imply?

The use of the GLD supposes two main implications:
(i) From subconscious to conscious mental activities: metacognitive processes are automatic and subconscious (Flavell, 1979). The GLD brings into light all those hidden mental processes, thus allowing for the conscious practice of the metacognitive skills that are so beneficial during learning processes. The mechanisms of the tool work as an active, direct, and conscious training for the students' minds.

(ii) From passive to active roles in and outside the classroom: the GLD implies a change of roles for students but also for teachers. Students that are to be involved in their self-regulated and meaningful learning should be active about their knowledge acquisition.

They should be willing to build knowledge from their previous insights, and they should also be ready to discover new concepts by themselves fostering critical thinking, and what is more, they should be willing to make decisions about their learning processes and to propose solutions to possible problems. This means that students have to put into practice their capacity to create, asses, and motivate themselves. As for teachers, the use of the GLD transforms them into guides. They don't have all the knowledge and answers any more. According to Martín (2012) the teacher who includes constructivist methodologies in the classroom should own the following seven characteristics (Martín, 2012):

1. He/she is a mediator between the students' knowledge and learning; they share their experiences and knowledge in a joint activity of knowledge construction.
2. He/she is a reflective person who thinks critically about his/her work in the classroom, able to make decisions and solve problems that arise in the best way, taking into account the socio-cultural context of his/her institution.
3. They are aware of and analyse their own ideas and paradigms about the teaching and learning process, and they are open to change and innovation.
4. He/she is a promoter of meaningful learning that makes sense, and he/she is really useful and applicable in the daily life of the students.
5. He/she is capable of providing pedagogical help relevant to the diversity of characteristics, needs and interests of his/her students.
6. His/her goal is to achieve the autonomy of the learners, which is given with the support of the gradual process to transfer in an ascending way the feeling of responsibility and self-regulation in them, that is to say, he/she is concerned with training self-taught students, with the capacity to learn by themselves.
7. He/she facilitates knowledge, providing students with the necessary scaffolding to access, achieve, reach and, consequently, build meaningful learning.

2.3 The development of the GLD

Four steps are to be followed for the development of the diary: first of all, and before creating the GLD, the general objectives of the course should be well-defined and specified by the teacher, bearing in mind that these objectives are the basis that will form all the sections of the GLD. These objectives are considered as long-term goals.

The second step entails the division of the GLD into sections or chapters, according to the units of the course to be taught. Titles are required for each section so as to let students know where they are at every moment of their learning process.

The third step consists in establishing sub-objectives within each of the chapters. This step is crucial for the GLD, since it informs students about (i) what they will learn in that chapter, (ii) why they should learn it, and (iii) the benefits of that learning inside and also outside the classroom. These objectives are considered as short-term goals to be achieved by students, thus fostering their motivation towards the accomplishment of the course. It was Zimmerman (1989: 133) who claimed that "metacognitive decision-making also depends on the long-term goals of the student. [...] A particularly effective strategy for achieving long-term goals is to set intermediate goals". Zimmerman's idea is supported by other research (Bandura & Schunk, 1981), stating that the effects of establishing short-term goals are much more stunning compared to the effects of long-term objectives.

The last step entails the design of the questions for each chapter, and this task may take longer than those of the rest of the steps. Two resources will be considered for the design of the questions: (i) Zimmerman's table of self-regulated learning strategies (1989: 337), included in Appendix I, and (ii) Schraw and Dennison's Metacognitive Awareness Inventory (1994: 472), included in Appendix II.

As stated by Bort-Mir (2016), the use of these two resources by no means implies that all the questions from Zimmerman's table and all the statements from Schraw and Dennison's inventory should be included in the GLDs. Teachers must carefully select which statements and questions to include in their diaries according to their particular topics and objectives. "The teachers' self-critical thinking and their ability to reflect on what is

important to their students will shape their own guide to include the right questions in each chapter of the GLD" (Bort-Mir, 2016: 427).

2.4 How to use the GLD?

The use of the GLD as a tool in the classroom should allow teachers to follow up their students' diaries by reviewing them on a weekly basis or, at least, at the end of each unit of the course, a condition that is possible following these two main instructions:
Teachers should explain the tool in detail, informing students about its mechanisms and use at the start of the course. Students should know what the GLD is and why it is good for them to use it.

At the end of each unit, teachers and students must interact by means of the GLD. Students must hand in or send their diaries to their teachers, and teachers are in charge of reviewing the GLDs. This review consists of commenting on the students' progress and detecting possible deficiencies, not only regarding the students' knowledge but also regarding the teaching methodology or content dealt with in class.

2.5 Better results with the use of the GLD

As reported by Bort-Mir and Silvestre López (2017), the use of the GLD throughout the course resulted in deeper communication and collaboration between students and teacher, meaning a trustworthy continuous dialog in class about contents, methodology, and also about the overall feeling during the sessions. Better grades were also achieved compared to the grades from the previous academic course, even though the authors pointed out that this overall improvement might be due to other variables that should be considered for future research, such as having a different teacher or different content during the course.

2.6 The format of the GLD

The GLD adapts to the two formats available: it can be designed in paper-format and as online diaries as well. The decision is a question of the teacher's tastes and preferences. The first GLD (Bort-Mir & Silvestre-López, 2017) was created via the Virtual Classroom at Universitat Jaume I so its use was restricted to the users within that institution. The objective of the present paper is to expand the use of the GLD to the general public by implementing it via an online open-source app called Penzu™.

3. Developing the GLD with Penzu™

Penzu™ is a free, online platform for the creation of online diaries. An online diary, also called digital diary or e-diary, is defined by the company as "a record that can be used to detail everything from your feelings about a particular situation in your social life to your thoughts on a current event in the political world" (Penzu, 2019, retrieved from https://penzu.com/what-is-a-journal). The diaries are available through a mobile app that can be downloaded either from Google Play or App Store, but there is also the website version for those people working through computers or laptops. The Penzu website allows for the creation of different types of diaries such as travel diaries, food diaries, pregnancy journals, and also academic diaries.

3.1 Getting started with Penzu™

Once the student downloads the app or opens the website on the pc, an account should be created accordingly. The following step is establishing the cover for the journal and modifying its name (see Figure 1).
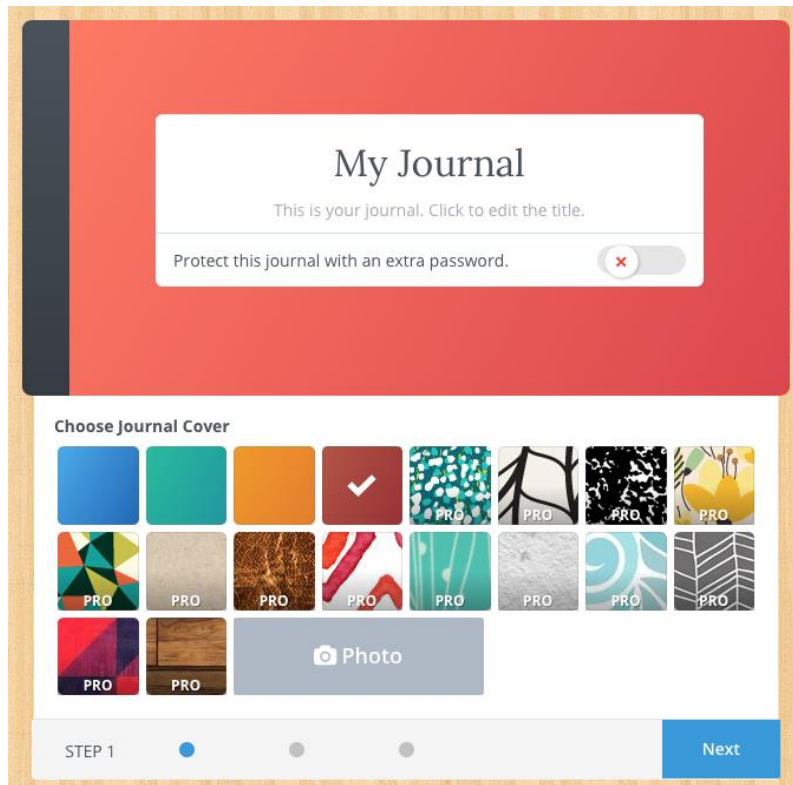
Figure 1. Cover and title.

After the creation of the journal, students are then allowed to write in their entries. Each entry can have its own title, and students can also upload pictures in each of the entries. This is a very useful tool since students are able to add slides or files in jpg format to their entries (Figure 2), something that may help them illustrate the contents they are writing about.
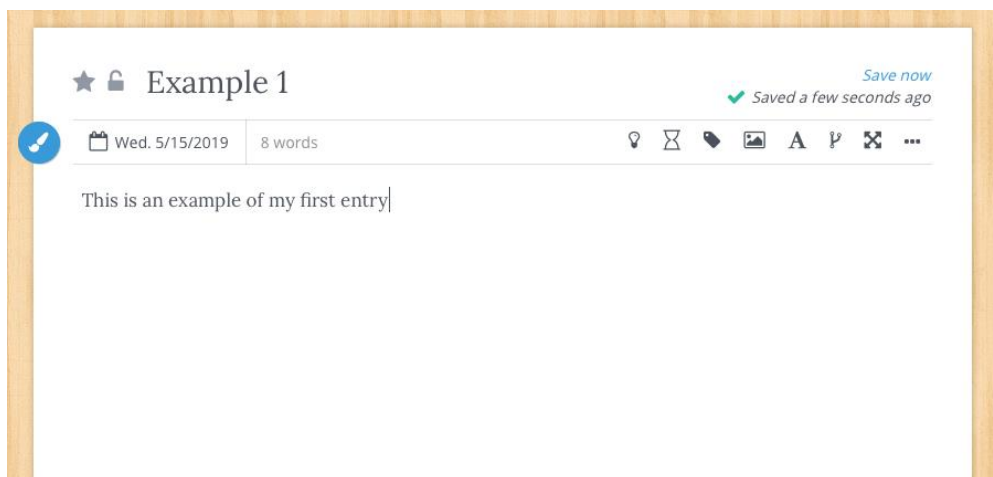

Figure 2. Example of an entry with Penzu.

All entries can be shared by email or via public link (Figure 3) so that students send their entries to their teachers for the subsequent reviewing process.

Figure 3. Entry sharing.

Another interesting feature of this tool is that students can chose to set up reminders to write their entries (Figure 4).

Figure 4. Setting up reminders for writing.

3.2 Instructions for teachers

Penzu's online diaries are private. This means that they cannot be publicly accessed by teachers to include titles, chapters, nor even the questions that have been specifically designed to foster the conscious use of metacognitive skills. Consequently, teachers should hand in a file (printed or in pdf format) to their students containing the following information:

1. The chapters or units of the diary and the specific objectives in each of the chapters. Students shall create one entry per chapter/unit of the course.

2. The questions to be answered by students in each of the chapters and the statements to reflect upon.

3.3 GLD proposal

This section aims at offering a proposal of a GLD for the English Semantics subject within the English Studies Degree at Universitat Jaume I (Castellón, Spain). The number of participants for this subject is around 60 students per academic year. Concretely, the section describes the content of the GLD for one of the units of the subject: Conceptual projections: metaphor and metonymy.

The four steps developed in section 2.3 are exemplified as follows:

- Long-term objectives are established in general terms for the whole course in the first step. As for these objectives, they are specified in the syllabus of the subject that can be publicly accessed from https://e-ujier.uji.es/pls/www/gri_www.euji22883_html?p_curso_aca=2018&p_asignatura_id=EA0927&p_idioma=UK&p_titulacion=205.

  The long-term objectives for the English Semantics subject are the following: (i) construct hierarchies of concepts (conceptual maps) in English, (ii) describe and explain semantic configurations and mechanisms in English, (iii) examine and analyse a cognitive domain from the student's own perspective, (iv) identify semantic configurations and mechanisms from natural language in English, and (v) produce linguistic expressions and texts in English that illustrate semantic mechanisms and configurations.

- Step two entails the division of the GLD into different chapters. According to the contents of the course, this GLD would contain a total of eight chapters, entitled as follows:

    1. Semantic features and relations of meaning
    2. Types of meaning: descriptive, social and expressive, and their expression in English
    3. Predication in the English sentence: predicates and arguments. Thematic roles
    4. Propositional analysis of English texts
    5. The role of encyclopaedic knowledge and the representation of propositional knowledge
    6. Conceptual projections: metaphor and metonymy
    7. Lexical-grammatical realisations of the different types of meaning
    8. Introduction to English phraseology

- The third step for the development of the GLD consists in establishing several sub-objectives or short-term goals within each chapter. As for the selected chapter for the proposal (Chapter 6, Conceptual projections: metaphor and metonymy), the short-term goals are established as (i) being able to understand the mechanisms of metaphor and metonymy, (ii) becoming aware of the vast use of metaphorical and metonymic expressions in our everyday language, and (iii) being able to identify metaphors in distinct types of discourse with the use of structured methodologies.

- Finally, a fourth step leads teachers to design the questions and reflective statements about (i) the content of the course, and (ii) the learning strategies and metacognitive abilities. As for the chapter that is used for the proposal, some of questions to be included in this section would be the following:

    - *In which sense can the awareness of the existence of metaphors in your everyday language be useful in your life?*

- *Have you ever tried to create a metaphor when trying to explain an abstract concept? Explain the experience.*
- *How would you explain in your own words what a metaphor is?*
- *How would you explain in your own words what metonymy is?*
- *Is this content related to something else from other subjects in past courses from the Degree?*

After the questions, the GLD should include a short list of reflective statements, based on Schraw & Dennison's Metacognitive Inventory Awareness (1994: 472). The statements are to be responded to on a yes/no basis with the purpose of making students reflect about their learning processes. This list would contain some statements similar to the following ones:

- *I usually think about what I really need to learn before I begin a task.*

- *I set specific goals before I begin a task.*

- *I'm good at organizing information.*

- *I know what the teacher expects me to learn.*

- *I try to translate new information into my own words.*

- *I summarize what I've learned after I finish.*

- *I am good at remembering information.*

The statements and questions to be included in the GLD should be based on the specific and general objectives of the course, and they should be aimed at making students consciously reflect about their learning process.

4. Conclusions

As stated in the introduction of the paper, the development of students' metacognitive skills in a conscious fashion should be put into practice in learning environments in order to produce better academic results.

Promoting meaningful learning and improving learners' motivation is essential for students' success, and teachers should become involved in this process. The use of ICT in the classroom is one of the options available in many educational institutions to increase student motivation.

The present paper presents a tool that allows for the conscious practice of metacognitive skills in and outside the classroom. The Guided Learning Diary (GLD) helps teachers and students reflect on the teaching and learning processes, thus making the classroom environment a better place in two regards: (i) the tool allows teachers to detect deficiencies in their methodology or in specific content that can be later amended in class, thus facilitating and clarifying information that may be highly valuable for students, and (ii) students are not only able to indirectly provide feedback to teachers, but they are also guided to deliberately practice their metacognitive abilities with the concrete goal of improving their grades in the final exams.

The online app that is described in this work, Penzu, seems to work well for the specific objectives of the GLD: it helps increase the motivation of students through the use of technology, and it also allows for the enhancing of metacognitive skills.

All in all, further research is needed in order to use the GLD in several formats and through other different apps for comparative results.

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Appendix I

Table of self-regulated learning strategies (Zimmerman, 1989:337):

Self-Regulated Learning Strategies

Categories/Strategies	Definitions
1. Self-evaluating	Statements indicating student-initiated evaluations of the quality or progress of their work; e.g., "I check over my work to make sure I did it right."
2. Organizing and transforming	Statements indicating student-initiated overt or covert rearrangement of instructional materials to improve learning; e.g., "I make an outline before I write my paper."
3. Goal-setting and planning	Statements indicating students' setting of educational goals or subgoals and planning for sequencing, timing, and completing activities related to those goals; e.g., "First, I start studying two weeks before exams, and I pace myself."
4. Seeking information	Statements indicating student-initiated efforts to secure further task information from nonsocial sources when undertaking an assignment; e.g., "Before beginning to write the paper, I go to the library to get as much information as possible concerning the topic."
5. Keeping records and monitoring	Statements indicating student-initiated efforts to record events or results; e.g., "I took notes of the class discussions"; "I kept a list of the words I got wrong."
6. Environmental structuring	Statements indicating student-initiated efforts to select or arrange the physical setting to make learning easier; e.g., "I isolate myself from anything that distracts me"; "I turned off the radio so I can concentrate on what I am doing."
7. Self-consequating	Statements indicating student arrangement or imagination of rewards or punishment for success or failure; e.g., "If I do well on a test, I treat myself to a movie."
8. Rehearsing and memorizing	Statements indicating student-initiated efforts to memorize material by overt or covert practice; e.g., "In preparing for a math test, I keep writing the formula down until I remember it."
9-11. Seeking social assistance	Statements indicating student-initiated efforts to solicit help from *peers* (9), *teachers* (10), and *adults* (11); e.g., "If I have problems with math assignments, I ask a friend to help."
12-14. Reviewing records	Statements indicating student-initiated efforts to reread *notes* (12), *tests* (13), or *textbooks* (14) to prepare for class or further testing; e.g., "When preparing for a test, I review my notes."
15. Other	Statements indicating learning behavior that is initiated by other persons such as teachers or parents, and all unclear verbal responses; e.g., "I just do what the teacher says."

Appendix II

Metacognitive Awareness Inventory (MAI) (Schraw & Dennison, 1994):

1. I ask myself periodically if I am meeting my goals. (M)

2. I consider several alternatives to a problem before I answer. (M)
3. I try to use strategies that have worked in the past. (PK)
4. I pace myself while learning in order to have enough time. (P)
5. I understand my intellectual strengths and weaknesses. (DK)
6. I think about what I really need to learn before I begin a task. (P)
7. I know how well I did once I finish a test. (E)
8. I set specific goals before I begin a task. (P)
9. I slow down when I encounter important information. (IMS)
10. I know what kind of information is most important to learn. (DK)
11. I ask myself if I have considered all options when solving a problem. (M)
12. I am good at organizing information. (DK)
13. I consciously focus my attention on important information. (IMS)
14. I have a specific purpose for each strategy I use. (PK)
15. I learn best when I know something about the topic. (CK)
16. I know what the teacher expects me to learn. (DK)
17. I am good at remembering information. (DK)
18. I use different learning strategies depending on the situation. (CK)
19. I ask myself if there was an easier way to do things after I finish a task. (E)
20. I have control over how well I learn. (DK)
21. I periodically review to help me understand important relationships. (M)
22. I ask myself questions about the material before I begin. (P)
23. I think of several ways to solve a problem and choose the best one. (P)
24. I summarize what I've learned after I finish. (E)
25. I ask others for help when I don't understand something. (DS)
26. I can motivate myself to learn when I need to. (CK)
27. I am aware of what strategies I use when I study. (PK)
28. I find myself analyzing the usefulness of strategies while I study. (M)
29. I use my intellectual strengths to compensate for my weaknesses. (CK)
30. I focus on the meaning and significance of new information. (IMS)
31. I create my own examples to make information more meaningful. (IMS)
32. I am a good judge of how well I understand something. (DK)
33. I find myself using helpful learning strategies automatically. (PK)
34. I find myself pausing regularly to check my comprehension. (M)
35. I know when each strategy I use will be most effective. (CK)
36. I ask myself how well I accomplished my goals once I'm finished.

(E)

37. I draw pictures or diagrams to help me understand while learning. (IMS)

38. I ask myself if I have considered all options after I solve a problem. (E)

39. I try to translate new information into my own words. (IMS)

40. I change strategies when I fail to understand. (DS)

41. I use the organizational structure of the text to help me learn.

42. I read instructions carefully before I begin a task. (P)

43. I ask myself if what I'm reading is related to what I already know. (IMS)

44. I reevaluate my assumptions when I get confused. (DS)

45. I organize my time to best accomplish my goals. (P)

46. I learn more when I am interested in the topic. (DK)

47. I try to break studying down into smaller steps. (IMS)

48. I focus on overall meaning rather than specifics. (IMS)

49. I ask myself questions about how well I am doing while I am learning something new. (M)

50. I ask myself if I learned as much as I could have once I finish a task. (E)

51. I stop and go back over new information that is not clear. (DS)

52. I stop and reread when I get confused. (DS)

Note. DK, declarative knowledge; PK, procedural knowledge; CK, conditional knowledge; P, planning; IMS, information management strategies; M, monitoring; DS, debugging strategies; and E, evaluation.