

Developing Self-regulated Learning skills in University students studying in the Open & Distance Learning Environment by using KWL method

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ABSTRACT

Open and Distance learning (ODL) is considered an important strategy for increasing educational access, improving the quality of education, advocating for peer-to-peer collaboration, and providing learners with a greater sense of responsibility for learning (Calvert, 2006). However, students learning in ODL environments may face more challenges than the students in conventional learning environments. Studies have indicated that students with self-regulated learning skills are more likely to be successful in ODL environments than those who do not have those skills (Das, 2010). A variety of studies have demonstrated that through instructional strategies, tutors can teach and help improve self-regulated learning skills. This development of skills may lead to reduced drop-out rates (Zohrabi, 2013; Talbert, 2014; Radovan, 2011). To examine the suitability of self-regulated skills development strategies, researchers of this study utilized a KWL (What I Know, What I Want to Know! , What I Learned) chart method in the ODL environment in Sri Lanka to help develop self-regulated learning (SRL) skills in university students. As part of a mixed-method action research study, twenty-four (24) Bachelor of Education students and three (03) educators at the Open University of Sri Lanka participated. Zimmerman & Moylan's (2009) self-regulated cycle of learning model was used for the intervention. A Motivated Strategies for Learning Questionnaire (MSLQ,1991) was administered to measure students' SRL skills. Observations, reflections, and focus group discussions were used to collect qualitative data. The findings of the study indicated that the KWL method contributed to improvement of self-regulated learning skills among student participants.

INTRODUCTION

Open and Distance learning (ODL) is considered an important strategy for increasing educational access, improving the quality of education, advocating for peer-to-peer collaboration, and providing learners with a greater sense of responsibility for learning (Calvert, 2006). According to UNESCO (2002) the term open and distance learning reflects both the fact that all or most of the teaching is conducted by someone removed in time and space from the learner, and it includes greater dimensions of openness and flexibility, whether in terms of access, curriculum or other elements of structure.

However, university students studying in ODL environments can be identified as a special group because they are dispersed and physically separated from the institution and they do not have the same support systems as institution-based learners. Das (2010) pointed out that inefficient management of time, lack of sustaining motivation, not having any encouragement from their home or work places and lack of modeling are some other constraints that they have to face. The absence of an immediate teacher, isolation from peer groups and irregular contacts at the study centre sometimes become major hindrances in their learning. However, a large number of students learn in the open and distance learning environments in the world today. But dropout rates for distance education courses are usually higher than those for comparable courses in the conventional system and it is a widely recognized issue and has been subject to considerable investigation (Garrison, 1987).

Number of studies have emphasized that high student dropout rates have been reported in educational institutions using open and distance learning methods and multiple factors at personal and institutional levels have influenced students to dropout (Narasimharao,1999; Kamau, 2006). To overcome this situation university students in the open and distance learning environments have to be 'independent learners' and should be responsible for their own studies. This is where the importance of self- regulated learning (SRL) becomes an important factor. If students study in ODL environments possessing self-regulated learning characters they can behave as independent learners which is a very important feature for open and distance learning (Corno,2001). Further available literature emphasized that the SRL is not a fixed trait, but rather a skill that can be developed and honed through experience and practice applying self-regulated learning strategies (Schunk, 2005; Zimmerman, 2015). Therefore, to help these students to be self-regulated learners, educators in ODL environments should encourage self- regulated learning among their students by using suitable strategies and tools. Considering these reasons researcher of this study used the KWL method in the ODL environment in Sri Lanka to develop self-regulated learning (SRL) skills in university students.

LITERATURE REVIEW

Open and distance education refers to various forms of educational activities in which learners are physically apart from the teacher or the teaching institution for much of the teaching and learning process (Rumble, 1989). Therefore, these students are isolated or semi-isolated students whose concept of going to school is limited to their study materials, their study space, mailbox and/or their telephones (Moore, 1986). Shirley (2012) has revealed that for many students the result is disenfranchisement, frustration and in many cases, dropout. Das (2010) pointed out that to face these challenges faced by open and distance learners they have to be 'independent learners' and they have to be largely responsible for themselves about their own studies and their outcomes. According to the existing literature this is where the importance of self-regulated learning (SRL) becomes an important factor.

Self-regulation from a Social Cognitive perspective looks at the triadic interaction between the person (e.g. beliefs about success), his or her behavior and the environment (Zimmerman, 1989). Zimmerman (2008) provided a widely relied upon definition of self-regulation as the ability to control thoughts and actions to achieve personal goals and respond to environmental demands. Efklides (2011) stated that the key components of self-regulated learning are cognition, metacognition, motivation, affect, and volition. All these definitions revealed that self-regulated learning (SRL) is a complex process, containing cognitive, motivational and contextual elements.

However, Schunk (2005) emphasized that SRL is not a fixed trait, but rather a skill that can be developed and honed through experience and practice applying self-regulated learning strategies. Although the research studies on the application of SRL in the context of distance education are limited, Radovan (2011) discovered possible relationships between self-regulated learning dimensions and students' success in a distance-learning programme through a research study which was conducted by using a survey design with 319 students. Findings of the above study emphasized that students who study in distance-learning courses need self-regulated learning strategies to be successful learners. But Ambreen et al (2016) pointed out most teachers believe that teaching self-regulated learning strategies in the distance education context is not an easy job. But Pajares (2002) revealed that by using the social cognitive theory as a framework, teachers can work to improve their students' emotional states and to correct their faulty self-beliefs and habits of thinking (personal factors), to improve their academic skills and self-regulatory practices (behavior), and to alter the school and classroom structures that may work to undermine student success (environmental factors). Therefore, within the present study the researcher used the social cognitive theory as a framework to implement a KWL method in the ODL environment in Sri Lanka to develop self-regulated learning (SRL) skills among university students.

According to existing literature the KWL method was initially introduced as a theory-based, multiple strategy framework that develops students' engagement and comprehension of texts (Riswanto et al 2014). According to Riswanto et al (2014) this framework develops students' interest in new vocabulary by enabling them to brainstorm ideas and form inferences by setting learning goals and activating appropriate background knowledge. It also enables them to set goals by determining what they want to learn and to design their own questions to monitor understanding (Woolley, 2010). When using this strategy during the teaching learning process students have to fill a table named the KWL table. This table contains three columns indicating three pre-designed questions as follows.

- What do I know?- ('K' column)
- What do I want to know? – ('W' column)
- What did I learn?- ('L' column)

According to Winne (2001) the first question of the KWL table aims at activating the prior knowledge of students and to find out their understanding of the topic to be learned. The second question helps to encourage students to inquire into the topic and to formulate their own targets about what they wish to learn during the lesson. The third question directs the students to reflect and summarize what they have learned at the end of the lesson. Winne (2001) further pointed out that by initiating the use of the KWL table early in the lesson allows teachers to understand the students' prior concepts of the subject and to encourage students to initiate their own inquiry of the subject over the duration of the lesson. Therefore, educators can use this strategy to scaffold and foster student's cognition, metacognition and motivation which are very important components of self-regulation.

Zimmerman & Moylan's (2009) self-regulated learning model which reflects Bandura's (1986) Social Cognitive was used for the implementation of KWL strategy. It comprises three phases namely, forethought, performance phase and self-reflection. The forethought phase is the initial phase in which students set the stage for learning. Students implement learning strategies and cognitively compare their performances with their goals to determine progress during the performance phase. Students mentally review their performances and determine whether changes in behaviors or strategies are needed or to seek help from others during the self-reflection phase.

METHODOLOGY

The main aim of the study was to examine the suitability of self-regulated skills development strategies that can be adopted in the ODL environment in Sri Lanka to develop SRL skills in university students.

The objectives of the study were,

1. To identify self-regulated learning skills of B.Ed students studying in the open and distance learning environment.
2. To plan and implement an intervention to use KWL method to develop self-regulated learning skills in B.Ed students studying in the open and distance learning environment.
3. To assess the impact of the intervention.

The research paradigm selected for the study was Qualitative dominant mixed methods action research. Twenty-four (24) Bachelor of Education students and three (03) educators at the Open University of Sri Lanka were the participants. Zimmerman & Moylan's (2009) self-regulated cycle of learning model was used to integrate KWL strategy into the teaching learning process. Motivated Strategies for Learning Questionnaire (MSLQ, 1991) was used to assess student participants' self-regulated learning skills. It is a both motivational and strategy oriented self-report instrument which has been applied and validated at different educational levels, both university and non-university. Observations, reflections, and focus group discussions were used to collect qualitative data. Statistical Package for the Social Sciences (SPSS 16.0) was used to analyze Quantitative data and Qualitative data were analyzed by using content analysis.

RESULTS AND DISCUSSION

KWL method was implemented within the day schools of Bachelor of Education degree programme across the three phases (forethought, performance phase and self-reflection) of the Zimmerman & Moylan (2009) self-regulated cycle of learning model for a six (06) months period. According the existing literature, SRL behaviors are context-specific. Therefore, the procedure that followed during the implementation of KWL method within one day school of Inclusive Education course was explained below as an example to give an idea about how to use KWL method to develop SRL skills.

At the beginning of the lesson (in the forethought phase) the new strategy (using KWL method) was introduced and modeled to student participants on how to complete the KWL table. A copy was distributed to each student participant and a brief discussion was held with them to introduce the topic of the lesson 'methods use to assess special needs students. Next a short video was shown about special needs students as an approach to the lesson. After that, student participants were encouraged to talk about their feelings about the message that the video tried to convey. The student participants were then asked to fill the 'K' column (what do I know about methods use to assess special needs students?) of the KWL chart individually. As a class, they shared their individual answers, brainstormed other's ideas, and discussed about responses within a short time. Next student participants were directed to fill the second column 'W' (what do I want to know about methods use to assess special needs students?) individually. The student participants' responses were then discussed as a class.

Findings based on the researcher's observations about forethought phase

- To fill the 'K' column of the KWL table, student participants brainstormed their prior knowledge about the given topic. Winne (2001) also revealed that by answering the first question in the KWL table (what do I know (K)?) at least two types of knowledge and experiences stored in the long term memory would be more or less activated: (a) some prior domain knowledge of the task; and (b) strategies used with similar tasks in the past. According to Szabo (2006) the 'K' column gives an opportunity to the individual to build up self-motivation regarding the topic.
- The 'W' column directed student participants to think about what they want to know about the topic of the lesson that is going to be learn in the day school. It directed the student participants to set learning goals for them individually for the lesson based on their understanding about the topic. Sha et al. (2012) stated that the second KWL question, helps students to externalize their learning goals based on the products of cognitive operations that done within the time period in which they answered the first KWL question.

At the end of the forethought phase student participants were grouped to form six (6) small groups (four members for each group) and distributed the additional reading materials related to the lesson to them. Then the student participants were guided to read the relevant lesson of the Inclusive Education module and the given additional

reading material individually to find the knowledge about the methods that use to assess special needs students. Further educator advised student participants to get the peers' help or the assistance of the educator to clarify the facts if needed. The educator informed that each group has to prepare a short presentation based on the facts that they found individually from the module and the additional reading material.

During the performance phase each student participant actively engaged in their learning activity and when they completed individual activities each group worked to prepare their presentations. The educator monitored the process, guided student participants and facilitated their learning.

Findings based on the researcher's observation about performance phase

- Collaborative learning occurred between student participants. (The group work was not well structured and different tasks particular to each group member was not assigned by the educator. Therefore, positive interdependence and individual accountability were not observed at a sufficient level such as in a cooperative learning. Therefore, it was more suitable to state that the student participants engaged in collaborative learning in this learning activity.
- Student participants engaged in active reading. They scanned information, highlighted the important points and underlined the key words (organizational strategies), summarizing the main ideas and made short notes in the margin and discussed some important points with others while reading the learning material and the module (Elaborative strategies).

According to Garcia (1995) these cognitive strategies such as organizational strategies (selecting the main idea from the text, outlining the text or material to be learned, specific techniques for selecting and organizing the ideas in the material) and the elaboration (summarizing the material to be learned, generative note-taking, explaining the ideas in the material to be learned to someone else, and question asking and answering) are useful for integrating and connecting new information with previous knowledge.

- Student participants sometimes used help seeking skills to clarify the content of the module and the given reading material.
- In the performance phase face to face interactions between group members and group processing occurred.
- Student participants were directed to practice time management skill by allocating a particular time period to complete the given task.
- Interactions with peers in preparing a presentation as a group (social interactions) and assigning to find the information by reading the module and given reading materials individually helped to motivate the student participants and to maintain their attention throughout the learning task with more effort (effort regulation). Palmer (2007) also stated that when students have positive social interactions with their peers or teacher, they will become more engaged in learning. Pintrich (2002) pointed out that effort regulation transforms motivation to engagement.
- At the end of the performance phase each group presented their findings in relation with the topic of the lesson. Each group presentation was assessed by the educator and the peers also provided their feedback according to their view points. To provide feedback peers had to think critically about the facts presented by other groups. Positive feedbacks that were given by the educator and peers helped to improve student participants' self-efficacy. Schunk (1994) revealed that positive feedbacks had a stronger positive effect on students' self-efficacy.

After the group presentations the educator advised the student participants to fill the third column of the KWL table (L column- What have I learnt about the methods use to assess special needs students?) individually. To fill this each student participant had to reflect on what they learnt. Then student participants were directed to compare their present knowledge about the lesson with the prior knowledge that they had mentioned in the 'K' column. Further they were guided to make self-judgments about whether they had reached their learning goals by comparing their present knowledge with the information that they mentioned in the 'W' column in the KWL table.

Findings based on the researcher's observations about self-reflection phase

- Student participants reflected and summarized what they had learnt at the end of the lesson.
- This activity directed the student participants to self-evaluate about how well they had learnt and to make self-judgments about whether they had reached their learning goals.

According to Susan (2006) 'L' column in KWL table helps students to self-monitor their learning and to self-evaluate about what they understood and it provides an opportunity to expand on their ideas and to formulate new

ones. Riswanto et al. (2014) pointed out that it pushed the students to conduct a further reading when they left some questions unanswered. Butler & Winne (1995) revealed that it functions as an internal feedback about the amount and rate of progress towards goals. They further state this internal feedback is regarded as an inherent mechanism for all self-regulated activities. At the end of the day school all student participants reflected on the KWL method as follows.

Findings based on student participants' reflections about the KWL method

- The 'KWL' method directed student participants to set their goals, improve their curiosity towards the learning and motivated them to engage in self-learning. The following reflections revealed this.

"I am willing to find new information that is not given in the leaflet about the topic and this activity directed me to self-learning". (Student participant no.1)

"This activity motivated me to find out the facts that I unknown to me about the topic that was discussed today". (Student participant no. 5)

"After this activity I thought that I should find more information about the today's topic". (Student participant no. 7)

- This learning activity helped each student participant to engage in classroom discussions and KWL gives the students some space to explore the information and build up their knowledge. According to the following reflections KWL method helped student participants to collect the new information and to stay them in their memory.

"I learnt many facts about methods that are used to assess special needs students and from the presentations of other groups I was able to cover the facts that I missed". (Student participant no. 4)

"During this activity I got a proper understanding about the lesson and because of discussions with other members I was able to remember many facts". (Student participant no.19)

Reflections revealed that the KWL method provided an opportunity for students to self-evaluate their knowledge and to make self-judgments through reflections.

"When I started to fill the KWL table at the beginning of the lesson I understood that my knowledge about the methods that can be used to assess the special needs students was very little. But when I filled the 'L' column at the end of the lesson I was happy because I felt that I had got a better knowledge than previously". (Student participant no.12)

After implementing the KWL method the three educators and the researcher had a focus group discussion to review the suitability of it to use to develop self-regulated learning skills in student participants and to identify the challenges faced by educators during the implementation.

Educator no.2 commented as follows.

"Students can complete this table individually, as a group or as the entire class. If the student number is large in a class it's better to have a group approach or fill the table as the entire class. If the group approach is used each group should present their facts to other students and if the table is filled by the entire class the teacher should display it to the whole class. If each student fills the table individually the teacher can use it to identify the prior knowledge of each student and can use it as a tool to assess each student. When reviewing the existing literature Jones (2012) also states that students can fill the KWL table individually or in a group setting. Riswanto et al (2014) state that a group of students learning with the KWL method had better results than the group learning in a traditional way".

Educator no.1 and educator no.2 also agreed that the KWL method is a very useful method that can be used in the teaching learning process to direct students to be active and responsible learners.

Educator no .3 stated the challenges that had to face during the intervention as follows:

"The main challenge was time management. There were diverse learners in the sample. Some took more time to read and find the relevant facts of the lesson to fill the KWL table. To overcome this, I strictly maintained a particular time period for each activity of the lesson. Another challenge that I faced was some students' expectations were very high. Therefore, they wanted to know many facts that I couldn't cover during the limited time period. So, after the lesson I gave some links and list of references for them to find more information on what that they needed".

Administering the Motivated Strategies for Learning Questionnaire (MSLQ) for student participants:

MSLQ (1991) was administered for student participants before and after the intervention carried out through inclusive education. Collected data were analysed (Table 1) to gain an understanding about the level of self-regulated learning skills of student participants as a whole (as a class) only and not as individuals (as each participant). The reason was, the aim of this step was to measure self-regulated learning skills of student participants to obtain an overall idea about the effectiveness and suitability of the KWL strategy and tools that were used to develop self-regulated learning skills during the intervention.

Table 1, Self-regulated learning skills of the student participants as a whole for inclusive education course.

Self-regulated skills	Average class mean value		Average percentile	
	Before the intervention	After the intervention	Before the intervention	After the intervention
Intrinsic goals orientation	4.93	5.95	25- 4.06	25-5.31
			50- 5.25	50-6.00
			75- 6.00	75-6.75
Extrinsic goal orientation	5.54	6.25	25- 4.88	25-5.56
			50- 5.75	50-6.5
			75- 6.5	75-7.00
Task value	5.54	6.24	25- 5.17	25-5.83
			50- 5.83	50-6.42
			75- 6.42	75-6.96
Control of learning beliefs	5.57	6.31	25- 5.00	25-6.00
			50- 6.00	50-6.5
			75- 6.69	75-7.00
Self-efficacy	5.44	6.18	25- 5.00	25-5.75
			50- 5.56	50-6.19
			75- 6.22	75-6.94
Test Anxiety	4.42	3.14	25- 3.5	25-2.3
			50- 4.7	50-3.2
			75- 5.6	75-3.95
Rehearsal	4.74	5.91	25- 4.06	25-5.63
			50- 5.25	50-6.00
			75- 5.75	75- 6.75
Elaboration	5.08	5.88	25- 4.33	25-5.21
			50- 5.58	50-6.00
			75- 5.83	75-6.63
Organization	4.82	5.75	25- 4.06	25-5.00
			50- 5.25	50-6.00
			75- 6.00	75-6.25
Critical thinking	4.91	5.78	25- 4.05	25-5.2
			50- 5.2	50-6.00
			75- 5.75	75-6.4
Metacognitive self-regulation	4.89	5.67	25- 4.89	25- 5.1
			50- 5.04	50-5.83
			75- 5.83	75-6.44
Manage and regulate the time and study environment	4.82	5.71	25- 4.03	25-5.38
			50- 5.06,	50-5.88
			75- 5.84	75-6.38
Effort regulation	4.63	5.83	25- 3.38	25-5.06
			50- 5.13	50-6.00
			75- 5.75	

				75-6.63
Peer learning	4.3	5.42	25- 3.42	25-4.75
			50- 4.33	50-5.67
			75- 5.58	75-6.00
Help seeking	4.91	5.84	25- 4.25	25-5.5
			50- 5.5	50-5.75
			75- 6.00	75-6.63

There was a marked improvement of average class mean values and average percentiles of all fifteen self-regulated learning skills after the intervention.

CONCLUSIONS/RECOMMENDATIONS

Based on the findings of the research the impact of the intervention was positive and the following conclusions were obtained.

- KWL table directed the student participants to form their own learning goals, motivated them to engage in the learning activity to reach their goals and to metacognitively monitor their progress. Wine's phase model of self-regulated learning (2001) also pointed out that KWL table is a metacognitive tool.
- This table guided student participants to activate their prior knowledge and the memory of the strategies used in a similar learning situation and built up the interest and curiosity about the lesson to be learned. Further it helped to build up the new knowledge on the existing knowledge.
- KWL table helped student participants to construct their knowledge by guiding them to be active and responsible learners.
- Work with a KWL table pushed them for further learning which is very important for students studying in the open and distance learning environment.
- KWL table helped the educator also to identify the level of student participants' existing knowledge and what they expected to learn during the lesson. Therefore, it was very useful to plan their lessons successfully.
- Individual activities given in the intervention, helped students to develop their organization skills and elaboration skills.
- Group activity used during the intervention facilitated interactions between student participants which helped to motivate them. By giving opportunities to provide feedbacks about presentations done by peers helped to develop their critical thinking skills and positive feedbacks they obtained helped them to develop their self-efficacy.

Based on the above conclusions, KWL strategy is recommended for Educators as a self-regulated skills development strategy that can be adopted in the ODL environment in Sri Lanka.

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