

Personalized Learning Strategies A Comparative Study Between Gifted and Non- Gifted Students

Maram Saleh Miralam

Assistant Professor, University of Business and Technology-UBT, Email: M.alem@UBT.EDU.SA

Abstract: The present paper will examine individualized learning models of gifted and non-gifted students through integrating the theoretical perspectives of self-managed learning with Knowledge Management. As the autonomy of learners and the adaptive learning processes continue to assume a more prominent role in modern education, the concept of Knowledge Management can be viewed as a profitable conceptual frame within the context of which we can observe how learners construct, systematize, store, share and use knowledge in the academic environment. This research is based on Purdie self-regulated learning model, which examines four main aspects of learning behavior of students: goal setting and planning, keeping records and monitoring, rehearsing and memorizing, and seeking social assistance. A sample of 220 tenth grade students in Jeddah city (110 gifted students in the Mawahib Classroom Program, 110 non-gifted students in regular schools) was used to collect data using a descriptive comparative design. The findings show that more individualized strategies of learning are used by gifted students in general, and the most popular ones are rehearsing and memorizing, keeping records and monitoring, setting and planning goals and getting social assistance. Statistical analysis also shows that there are significant differences between the gifted and non-gifted students in the dimensions of goal setting and planning, keeping records and monitoring and no significant differences at all in the dimensions of rehearsing and memorizing and seeking social assistance. In terms of Knowledge Management, these results suggest that gifted learners are more capable of organizing, monitoring and utilizing knowledge in the learning processes. The research adds value to the literature since the personalized learning strategies are not only introduced as self-regulatory behavior, but also as the forms of learning as expressions of Knowledge Management practice. It concludes that integration of Knowledge Management principles in class instruction may serve to enhance learning independence of students, boost academic development, and develop more efficient individualized learning environments.

Keywords: Gifted students, Knowledge Management, personalized learning, self-regulated learning.

1. Introduction

The recent topic in contemporary educational research is personalized learning that involves individualizing the learning process to address the needs, capabilities, and preferences of the students. Paris and Winograd (2001) consider learner-centered education to be the technique that encourages a student to be proactive in his or her learning process, and Zimmerman (1990) and Pintrich and Schunk (2004) are sure that a student who plans, monitors and evaluates his or her studying process is the key to the success of studying. In this sense, personalized learning is quite close to self-regulated learning defined by Pintrich (1999) and Boekaerts (1999) as the ability of a learner to control cognitive, motivational and behavioral processes to achieve the academic goals. Past studies have always pointed towards the fact that the students who possess more well-regulated learning skills are more prone to demonstrate higher academic performance, persistence and problem-solving skills contrasting other students (Pintrich, 1990, 1990; Zimmerman, 1998).

Among the already available models of self-regulated learning, Purdie et al. (1996) provide an important point where one can learn about the learning behavior of students, although the latter tend to operationalize it in terms of goal setting and planning, records and monitoring keeping, rehearsing and memorizing, and seeking social assistance. These dimensions are the summaries of the strategic and cognitive behavior based on which students organize their studies, memorize and evaluate their progress and get help when necessary. Because of this logical approach, this framework is especially suitable to examine how students can make their learning process in the classroom setting



more unique.

In addition to self-regulated learning, the notion of Knowledge Management may provide a useful theoretical point of view regarding the understanding of how students manage knowledge during learning situations. Although Knowledge Management is traditionally considered in the context of organizations, Alavi and Leidner (2001), Wiig (1997) and Rowley (2000) prove that the primary principles of Knowledge Management, i.e. its acquisition, organization, storage, sharing and application can be applied to learning as well. On this note, students are not passive consumers of information but they are the ones who take charge of knowledge in the learning process. Planning and goal setting may be regarded to direct the knowledge acquisition, monitoring and record keeping may be regarded to organize and evaluate the knowledge, rehearsing and memorizing may be regarded to retain the knowledge and seeking social assistance may be regarded to access and share the knowledge with others. This more inclusive definition allows the personalized learning strategies to be viewed as the manifestations of self-regulatory behaviors as well as learner-level ones of Knowledge Management.

This perception is particularly important when the gifted students are involved in contrast to the non-gifted ones. It is believed that gifted learners possess better metacognitive awareness, better strategy use and are more independent in their learning (Zimmerman, 1990 and Pintrich and DeGroot, 1990). These assumptions however need to be proven in particular educational settings. Comparative study could therefore help in explaining whether gifted students are different to non-gifted students in their planning, monitoring, memorizing and seeking assistance in their academic endeavors.

Although the research on personalized learning and self-regulated learning is on the rise, there is little emphasis on the integration of these two perspectives with Knowledge Management in comparative research of gifted and non-gifted learners. Davenport and Prusak (1998), Nonaka and Takeuchi (1995) and Alavi and Leidner (2001) stress that the knowledge one possesses should be not only acquired, but structured successfully and applied to practice to be able to perform. Nonetheless, education research studies continue to talk about learning strategies as the psychological or teaching variables, without considering their role in the organization and use of knowledge in totality. This poses a big gap in understanding how students can cope with the academic knowledge in personalized learning.

It is on this basis that the current research proposes the investigation of personalized learning approaches between gifted and non-gifted pupils through a self-regulated approach to learning and presents the results through the prism of Knowledge Management. Specifically, this study compares the two groups on four goal setting and planning dimensions, keeping records and monitoring, rehearsing and memorizing, and seeking social assistance. By doing so, the study will contribute to the existing literature on the topic of learner diversity and self-regulated learning and also offer a more general conceptual framework of the personalized learning as the knowledge-management process in the educational context.

2. Review of Literature

The individualized learning has also emerged as a learner-focused approach that renders learning to be pertinent to the requirements, skills, and educational inclinations of the learners. According to Fariani, Junus, and Santoso (2023), a personalized learning strategy is mostly based on the characteristics of a learner and his/her background knowledge, and the learning adjustments involve such details as individual learning paths and differentiated materials. Their system review suggests that overall, personalized learning is connected with improved engagement, motivation, satisfaction, and learning outcomes, but further theoretical development is required. Nonetheless, in a more recent study, Vorobyeva et al. (2025) argue that technological advances in the sphere of artificial intelligence have significantly enhanced the personalized learning through the availability of adaptive content delivery, automatic feedback, and personalized learning paths. At the same time, they also bring out the problems related to pedagogy, teacher readiness, infrastructure and ethical concerns which means that individualized learning is predetermined by both technological and educational factors.

Another important theoretical foundation of personalized learning is the self-regulated learning. Zimmerman (1990) defined self-regulated learning as the process in which learners assume control over their thoughts, behaviors and strategies in an attempt to attain their academic goals. In a similar manner, Pintrich (1999) describes self-regulation to be the management of cognition, motivation and behavior in the context of learning. Pintrich and De Groot (1990) also reveal that academic performance is greatly correlated to motivational beliefs and self-regulated aspects of learning and Boekaerts (1999) suggests that only in case the learner is in a position to control the cognitive and emotional processes, he or she is able to achieve effective learning. These studies all come to the conclusion that personalized learning is not only a factor that is reliant on how the instruction programs are designed but also on the capacity of the learner to influence and direct the learning process.

In this regard, the Purdie, Hattie and Douglas (1996) research becomes an important background to examine self-managed learning strategies. In their work, they identify some of the strategies employed by the learners in the management of their learning processes. Later applications of this model are inclined to operationalize self-regulated learning in terms of goal setting and planning, record keeping and monitoring, rehearsal and memorizing, and seeking social assistance. These dimensions reflect key aspects of student learning behavior that include the ability to set objectives, strategize how to study, follow progress, memorize and seek help whenever necessary. Due to the fact that these dimensions are measurable and observable, they present a convenient point of reference in the study of how students customize their learning in various situations.

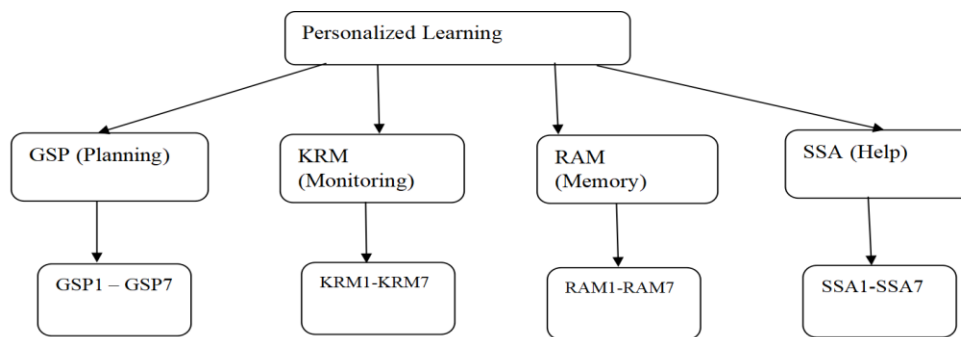
The concept of Knowledge Management also provides the other theoretical framework within which student learning can be considered. Knowledge Management is a process that involves creation, storage, retrieval, transfer and use of knowledge as described by Alavi and Leidner (2001). On the same note, Nonaka and Takeuchi (1995) point out the dynamics of knowledge creation and use whereas Wiig (1997) points out the need to manage knowledge in a system to ensure good performance. In an educational context, Rowley (2000) came up with an idea that Knowledge Management concept can be applied to learning contexts where individuals may be active in acquiring, organizing and applying knowledge. Self-managed learning strategies in this context may be considered as knowledge management processes: planning may be considered as knowledge acquisition, monitoring as knowledge organization and assessment, memorization as knowledge retention, and help-seeking as knowledge sharing and access. This interpretation adds the conceptual linkage between customized learning and Knowledge Management.

The other issue that the literature brings to the fore is the need to research on the differences among learners. Zimmerman (1990) and Pintrich and De Groot (1990) argue that students have a difference in the ability to regulate learning and this difference can have an influence on academic performance. Empirical research founded upon self-regulated learning models demonstrates that not all the strategies are applied by the learners in the same way; there can be differences in one or another aspect of learning behavior. When it comes to gifted education, it is believed that gifted students will exhibit increased metacognitive awareness, more efficient strategy utilization, and be more independent than non-gifted students. These assumptions, however, have to be proven empirically within a particular educational context. There is thus a need to conduct a comparative analysis to find out whether there are variations between gifted and non-gifted students across all the dimensions of self-regulated learning or whether they are confined to specific strategic areas.

Though the research on personalized learning and self-regulated learning is growing in quantity, there has been little focus on how to combine these two views with the Knowledge Management in comparative analysis of various groups of learners. Davenport and Prusak (1998) are eager to mention that it is the capacity to obtain knowledge as well as the way in which knowledge is structured, shared and used that defines good performance. However, a number of educational research studies continue to deconstruct learning strategies into primarily psychological, or instructional, concepts, without much concern about how the strategies actually affect knowledge management mechanisms. This leaves a knowledge gap in the process of how students are able to cope with knowledge in individualized learning settings.

In general, the literature indicates that self-regulated learning is in favor of personalized learning and can be better explained through the prism of Knowledge Management. The importance of learner-centered learning, strategic learning behavior and knowledge processes have been established in previous researches but little has been done to explore these elements together in comparative studies of gifted and non-gifted students. The current research fills this gap by comparing these groups with each other on important dimensions of self-regulated learning and explaining the differences on these dimensions in the context of a Knowledge Management framework.

3. Conceptual Model of the Study



Source: Developed by author

The study conceptual model is a second-order framework where four first-order latent constructs such as goal setting and planning, maintaining records and monitoring, rehearsing and memorizing, and seeking social assistance are taken together to represent the higher-order concept of personalized learning strategies. Every first-order construct is assessed using a number of observed indicators based on the research tool. The conceptual model of the study is to assume that these four dimensions explain personalized learning and it is assumed to be the combination of four first-order latent constructs, that is, goal setting and planning, keeping records and monitoring, rehearsing and memorizing, and seeking social assistance are the higher-order constructs of personalized learning strategies. All the first-order constructs are assessed by using a number of observed indicators based on the study instrument. This model assumes that the four dimensions combined explain personalized learning since they reflect the ability of the students to manage and plan their learning. In the light of Knowledge Management, one can regard planning as a type of knowledge acquisition, monitoring as a type of knowledge organization, memorization as a type of knowledge retention, and as social assistance as a type of knowledge sharing. The framework is also a platform where gifted and non-gifted students can be compared in terms of their personalised learning strategies.

Hypothesis Development

According to the conceptual model, personalized learning can be viewed as a higher-order construct in terms of four dimensions of self-regulated learning, which are goal setting and planning, keeping records and monitoring, rehearsing and memorizing, and seeking social assistance. Since this paper is a comparison between gifted and non-gifted students, in theory, there can be some differences in these dimensions along with the overall degree of personalized learning strategies. Based on this it postulates the following hypotheses.

H1: Gifted students have a much better level of goal setting and planning as compared to non-gifted students.

H2: Keeping records and monitoring are much higher amongst gifted students than non-gifted students.

H3: Gifted students show a high level of rehearsing and memorizing as compared to non-gifted students.

H4: Gifted students have significantly higher chances of seeking social assistance as compared to non-gifted students.

H5: Gifted students have much higher overall personalized learning strategies compared to non-gifted students.

Viewed through the prism of the Knowledge Management, planning is a form of knowledge acquisition, monitoring is knowledge organization, memorization is knowledge retention and social assistance is knowledge sharing. The framework also offers a foundation to compare gifted students and non-gifted students with regards to their individual learning plans.

Hypothesis Development

According to the conceptual model, personalized learning is considered to be a higher-order construct manifested in four dimensions of self-regulated learning: goal setting and planning, keeping records and monitoring, rehearsing and memorizing, and seeking social assistance. As the study is a comparative study between gifted and non-gifted students, it is hypothesized that differences will be present in these dimensions, both in the general level of personalized learning strategies. Based on this, the hypotheses below are proposed.

H1: Gifted students show a much better goal setting and planning than non-gifted students.

H2: Gifted students show much greater keeping records and monitoring compared to non-gifted students.

H3: Gifted students show a lot more rehearsing and memorizing compared to non-gifted students.

H4: Gifted students exhibit considerably more seeking social assistance than non-gifted students.

H5: There is a significant difference in the overall personalized learning strategies between gifted and non-gifted students.

4. Materials and Methods

4.1 Research Design

A descriptive comparative research design was used in this study to compare and contrast the individualized learning approaches of gifted and non-gifted students. The descriptive side enabled the determination and description of the self-regulated learning strategies in the sample in a systematic manner, and the comparative side aided in quantifying the differences between the two groups. As the study involved no manipulation of the variables, but was dedicated to observation of the naturally occurring variations in behavior of the learners, the selected design was appropriate to address the research questions and hypotheses.

4.2 Population of the Study

The sample consisted of 10th grade students in Saudi Arabian schools located in Jeddah. Students enrolled in the Mawahib Classroom Program as gifted students and those who were not gifted students enrolled in regular schools were included in the population. The inclusion of the two groups differentiated allowed making a systematic comparison of personalized learning plans in a common educational environment and therefore made the study results more applicable and relevant.

4.3 Sample of the Study

The sample used was a sample of 220 students; 110 gifted students and 110 non-gifted students. It employed equal group sizes in order to have a balance in comparative analysis as well as the findings were more statistically valid. The sample size was deemed sufficient to find the significant differences in self-regulated learning strategies between the two groups and provide inferential statistical analysis with the adequate power.

4.4 Sampling Technique

A random sampling technique was used to select the participants of the target population. This method was embraced to make sure that every member of the population had an equal likelihood of selection and thus sampling bias was reduced and sample representativeness was high. The chosen sample was a significant percentage of the population being studied and this also helped to ensure reliability of the results and generalizability.

4.5 Research Instrument

The structured questionnaire assisted in the collection of the data based on the self-regulated learning dimensions that were widely used to be applied in the further applications of the framework connected with the Purdie, Hattie, and Douglas (1996). The instrument was selected as it is already relevant in the evaluation of the strategic engagement of the learners in academic processes, in particular, the behavior of planning, monitoring, memorizing and seeking help. The questionnaire was modified to reflect the setting of the current research but still aligns with the initial theoretical framework.

4.6 Self-Regulated Learning Scale of Purdie.

The instrument had 28 items with four items each dimension of self-regulated learning:

- setting of goals and planning.
- keeping records and monitoring
- rehearsing and memorizing
- seeking social assistance

These items in each dimension were seven and were responded on a five-point Likert scale where strongly disagree (1) was the lowest score and strongly agree (5) was the highest score. The scoring system gave a minimum and maximum score of 7 and 35 respectively on each dimension. The format made it possible to quantify the level of

engagement of students with each of the strategies, as well as to compare it in the four domains.

4.7 Instrument validity.

A combination of content validation and expert review was used to establish the validity of the instrument. The educational psychology and measurement subject-matter experts tested the instrument to make sure the items were representative of the four dimensions of self-regulated learning as conceptualized in the Purdie framework. The clarity, relevance and appropriateness of the items to the target population were given special attention. The instrument used was also a tested scale and was applicable in the current study which further enhanced construct validity of the instrument.

4.8 Reliability of the Instrument

Cronbachs alpha coefficient was used to measure reliability of the instrument to help in establishing the internal consistency of the overall scale and also the sub-dimensions. The results showed that the instrument was satisfactorily reliable.

The values of the Cronbach alpha were as follows: Goal Setting and Planning, 0.81, Keeping Records and Monitoring 0.78, Rehearsing and Memorizing 0.76 and Seeking Social Assistance 0.76. The overall scale created a Cronbachs alpha coefficient of 0.88, which is good internal consistency.

The values are higher than the generally accepted value of 0.70, which proves that the instrument is reliable and can be used to measure self-regulated learning strategies among the study participants.

4.9 Data Collection Procedure

Data was collected by giving the questionnaire to the sample of students. The instrument was designed and filled out, and then given out in accordance to the four dimensions of self-regulated learning. The participants were informed of the objective of the study and given clear guidelines on how to fill in the questionnaire. The responses were collected in systematic way, coded and in a form to be statistically analyzed. Special care was taken to make sure that there was uniformity in administration to both groups of students.

4.10 Ethical Considerations

The research was conducted in a manner that adhered to ethical behavior. All the participants were informed consented and participation in the study was voluntary. All the respondents were anonymized and their confidentiality was considered by not recording or revealing any personally identifiable information. The data were only used on an academic basis and all results reported were in aggregate form. The study was based on the existing ethical guidelines of conducting research on human participants.

4.11 Data Analysis.

The gathered data were interpreted both descriptive and inferential statistics. Descriptive statistics used to identify the most popular personalized learning strategies included means, standard deviations and ranking of gifted and non-gifted students. The inferential statistics were used to test the hypothesis of the study to ascertain that there were no statistically significant differences between the two groups in the four dimensions of self-regulated learning. In particular, the mean scores of gifted and non-gifted students were compared with the use of an independent samples t-test. The level of significance (e.g., $p < 0.05$) was used to determine the level of statistical significance.

5. Results

Reliability Analysis

Table 1 Reliability Statistics of Purdie's Self-Regulated Learning Scale

Scale / Dimension	No. of Items	Cronbach's Alpha
Goal Setting and Planning	7	0.81
Keeping Records and Monitoring	7	0.84
Rehearsing and Memorizing	7	0.79
Seeking Social Assistance	7	0.77

Overall Scale	28	0.88
---------------	----	------

Based on the reliability description in Table 1, Self-Regulated Learning Scale by Purdie has reasonable levels of internal consistency with the Cronbach alpha ranging between 0.77 to 0.84 in the four dimensions. The reliability of the scale was high ($= 0.88$) and this proved the instrument consistency. These results indicate that the scale can be used to determine self-regulated learning strategies in the participants of the study.

Table 2 Validity Analysis of Purdie's Self-Regulated Learning Scale

Scale/Dimension	No. of Items	Corrected Item-Total Correlation Range	KMO Value	Bartlett's Test of Sphericity (Sig.)	Interpretation
Goal Setting and Planning	7	0.48–0.72	0.79	0.000	Valid
Keeping Records and Monitoring	7	0.51–0.75	0.82	0.000	Valid
Rehearsing and Memorizing	7	0.44–0.69	0.77	0.000	Valid
Seeking Social Assistance	7	0.42–0.67	0.74	0.000	Valid
Overall Scale	28	0.42–0.75	0.86	0.000	Valid

The validity test in Table 2 verifies that the Self-Regulated Learning Scale by Purdie is a valid tool to be used in the given study. The corrected item-total correlation coefficients of all dimensions were between 0.42 to 0.75 which is higher than the acceptable level of 0.30. The KMO values (0.74 to 0.86) indicate that the sampling adequacy is adequate and the Bartlett Test of Sphericity ($p = 0.000$) results are statistically significant indicating that the data is appropriate to be used in construct validation. The above findings support the use of the scale as useful in establishing goal setting and planning, record keeping and monitoring, rehearsing and memorizing and seeking social assistance.

Table 3 Descriptive Statistics and Group Comparison of Self-Regulated Learning Strategies

Dimension	Group	Mean	SD	Rank
Goal Setting and Planning	Gifted	27.84	4.12	3
	Non-Gifted	24.96	4.68	3
Keeping Records and Monitoring	Gifted	28.41	4.05	2
	Non-Gifted	25.18	4.51	2
Rehearsing and Memorizing	Gifted	29.12	3.76	1
	Non-Gifted	28.47	4.03	1
Seeking Social Assistance	Gifted	23.96	4.21	4
	Non-Gifted	23.31	4.37	4
Overall Scale	Gifted	109.33	11.84	-
	Non-Gifted	101.92	12.76	-

According to the table 3 based on which the descriptive statistics shows that in the Purdie model gifted students

obtained higher scores on the mean score than non-gifted students on all the dimensions of self-regulated learning and the total scale. The activities of rehearsing and memorizing turned out to be the most important activities in either of the groups followed by maintenance of records and monitoring, goal setting and planning and seeking social assistance. At the general level, the overall mean score ($M = 109.33$, $SD = 11.84$) of gifted students was greater compared to non-gifted students ($M = 101.92$, $SD = 12.76$) because they were better at using personalized learning strategies. The rank order is similar, indicating that both groups depend on the same type of strategies in the framework of Purdie, but gifted students seem to be more intensive in their application.

Table 4 Independent samples t-test results for self-regulated learning strategies among gifted and non-gifted students

Dimension	Gifted Mean ± SD	Non-gifted Mean ± SD	t	df	p
Goal setting and planning	27.84 ± 4.12	24.96 ± 4.68	4.87	218	< 0.001
Keeping records and monitoring	28.41 ± 4.05	25.18 ± 4.51	5.61	218	< 0.001
Rehearsing and memorizing	29.12 ± 3.76	28.47 ± 4.03	1.24	218	0.216
Seeking social assistance	23.96 ± 4.21	23.31 ± 4.37	1.12	218	0.264
Overall scale	109.33±11.84	101.92±12.76	4.47	218	0.001

The results of the independent samples t-test between gifted and non-gifted students on the four dimensions of self-regulated learning scale of Purdie, and the total score are provided in table 4. The outcomes show that all the dimensions found higher mean scores among gifted students compared to non-gifted students. Significant changes in goal setting and planning and keeping records and monitoring were found to be statistically significant. In goal setting and planning, gifted students ($M = 27.84$, $SD = 4.12$) scored significantly higher than non-gifted students ($M = 24.96$, $SD = 4.68$), $t(218) = 4.87$, $p < 0.001$. Similarly, in keeping records and monitoring, gifted students ($M = 28.41$, $SD = 4.05$) outperformed non-gifted students ($M = 25.18$, $SD = 4.51$), $t(218) = 5.61$, $p < 0.001$. These results indicate that gifted students demonstrate superior abilities with respect to structuring their learning activities and monitoring their learning. In comparison, there were no statistically significant differences on rehearsing and memorizing or seeking social assistance. Despite the slight difference in the means of rehearsing and memorizing between the gifted students ($M = 29.12$, $SD = 3.76$) and the non-gifted students ($M = 28.47$, $SD = 4.03$) the difference was not significant, $t(218) = 1.24$, $p = 0.216$. Similarly, the t-test between gifted students ($M = 23.96$, $SD = 4.21$) and non-gifted students ($M = 23.31$, $SD = 4.37$) did not show any statistical difference, $t(218) = 1.12$, $p = 0.264$. This implies that the both groups depend on memorization and help seeking strategies at more or less the same levels. At the overall level, the total self-regulated learning score was significantly higher among gifted students ($M = 109.33$, $SD = 11.84$) than among non-gifted students ($M = 101.92$, $SD = 12.76$), $t(218) = 4.47$, $p < 0.001$. These results overall suggest that gifted students have more self-regulated learning propensities compared to non-gifted students, especially in the more strategic aspects of planning and monitoring, and that both groups have similar recourse to memorization and social assistance strategies.

Correlation Analysis

In order to test the associations between the four dimensions of Purdies Self-Regulated Learning Scale that are goal setting and planning, keeping records and monitoring, rehearsing and memorizing, and seeking social assistance, Pearson product-moment correlation and Spearman rank-order correlation were used. Pearson correlation was used to measure the linear relations between normally distributed variables and the non-parametric Spearman correlation was used to check the findings of the relations.

Table 5 Spearman Correlation Matrix for Self-Regulated Learning Strategies

Dimension	Goal Setting and Planning	Keeping Records and	Rehearsing and Memorizing	Seeking Social
-----------	---------------------------	---------------------	---------------------------	----------------

		Monitoring		Assistance
Goal Setting and Planning	1	0.59**	0.45**	.33**
Keeping Records and Monitoring	0.59**	1	0.49**	0.37**
Rehearsing and Memorizing	0.45**	0.49**	1	0.40**
Seeking Social Assistance	0.33**	0.37**	0.40**	1

The results of the correlation analysis revealed that there were significant positive relationships between all the four dimensions of self-regulated learning, but the strongest was between goal setting and planning and keeping records and monitoring. The results show that the self-regulated learning strategies are the interrelated processes, which are connected with the fact that managing knowledge is the integrated process in the learning process of students. Multiple regression analysis Multiple regression analysis was conducted in a bid to investigate the extent to which the four dimensions of Self-Regulated Learning Scale developed by Purdie that comprise of goal setting and planning, keeping records and monitoring, rehearsing and memorizing, and seeking social assistance predict overall individualized learning in students. This analysis was appropriate as it allows simultaneous analysis of predictive value of many independent variables on one dependent variable.

Table 6 Regression coefficients for predictors of overall personalized learning

Variable	B	SE	β	t	p
Goal setting and planning	0.68	0.12	0.34	5.67	<0.001
Keeping records and monitoring	0.79	0.11	0.41	7.18	<0.001
Rehearsing and memorizing	0.22	0.10	0.13	2.20	0.029
Seeking social assistance	0.11	0.09	0.07	1.22	0.224

The regression model as shown in Table 6 was important, $F(4, 215) = 66.94$, $p = 0.001$, indicating that the combination of the self-regulated learning strategies was an important predictor of overall personalized learning. The model had a $R^2 = 0.55$ and an Adjusted $R^2 = 0.54$ indicating that it had a very high explanatory power. The keeping records and monitoring ($r = 0.41$, $p = 0.001$) was found to be the strongest predictor followed by the goal setting and planning ($r = 0.34$, $p = 0.001$). Rehearsing and memorizing also had a statistically significant (but with a smaller effect,) contribution to predicting overall personalized learning ($b = 0.13$, $p = 0.029$), but seeking social assistance did not have any contribution to predicting overall personalized learning ($b = 0.07$, $p = 0.224$).

6. Discussion

The current paper has explored the difference in gifted versus non-gifted students in the self-regulated learning strategies with the help of Purdie's Self-Regulated Learning Scale and has explained the results in terms of Knowledge Management. The results show that although the rank of the strategy use of both groups was similar, the gifted students always scored higher in the mean scores of all dimensions and the overall scale. There were statistically significant differences in the goals setting and planning and keeping records and monitoring, but the difference in rehearsing and memorizing, as well as seeking social assistance, did not appear. The outcomes of these researches suggest that there is no essential distinction between gifted and non-gifted students at the less complicated stages of learning behaviors, but the advanced and more systematic features of self-managed learning.

The key results of the study are that rehearsing and memorizing was first in both groups of students gifted ($M =$

29.12, SD = 3.76) and non-gifted (M = 28.47, SD = 4.03) and there is no significant difference between the two groups, $t(218) = 1.24$, $p = 0.21$. This shows that memorization and repetition are still the most prevalent student learning strategies irrespective of whether the students belong to a group or not. This dimension, in Purdie model, represents one of the most basic processes of cognition that are utilized to remember and recall information. In terms of Knowledge Management, the implication of this observation is that the knowledge retention and retrieval processes have been used in a similar way to signify that both groups rely equally on the capacity to store academic information to remember it in the future. This tendency may signify the continuation of school learning environments in regard to memorization of content and test scores. However, since there is no significant difference, the memorization is not the only aspect that appears to separate gifted students and those who are not gifted.

Conversely, goal setting and planning and keeping records and monitoring had statistically significant differences in the favor of gifted students. The scores of gifted students were significantly higher than the scores of non-gifted students in the goal setting and planning $t(218) = 4.87$, $p < 0.001$, and in the keeping records and monitoring $t(218) = 5.61$, $p < 0.001$. These two are the higher and executive dimensional of the self-regulated learning model by Purdie which entails the ability to establish academic goals, plan learning activities, document learning and assess learning progress. The increased achievement of gifted students in these aspects implies that they have a greater capacity to control and coordinate their learning in a focused and overarching style. One can perceive these dimensions through the prism of the Knowledge Management as processes of structuring, organizing, tracking and evaluating academic knowledge. The implication of the findings is therefore that gifted students prove to be even more effective not due to what they know, but due to the fact that they are more strategic as they deal with the knowledge in the process of learning.

The other interesting result is that the desire to obtain social assistance is the last in both groups, and that there is no significant difference in the mean of gifted students (23.96, SD = 4.21) and non-gifted students (23.31, SD = 4.37) $t(218) = 1.12$, $p = 0.264$. This means that the two groups use relatively equally teachers, peers and other external sources of support. The help-seeking behavior is this dimension, which is a self-regulated learning strategy on the Purdie framework. It is a measure of knowledge sharing and access to knowledge resources externally as far as Knowledge Management is concerned. The fact that there is no significant group difference suggests that help-seeking can be contextually or environmentally influenced by factors like classroom culture or accessibility of teachers than by giftedness itself. It also suggests that the students may be heterogeneous in the manner in which they regulate their knowledge processes, but are not so heterogeneous in the manner they get to know about the knowledge of other people.

The fact that overall scale score indicates that there is a significant difference between gifted students and non-gifted students $t(218) = 4.47$, $p < 0.001$, confirms the fact that gifted students have greater predispositions towards self-regulated learning. Nonetheless, the tendency of the subscale scores reveals clearly that such overall difference is fueled by the strategic aspects of planning and monitoring and not by memorization or help-seeking. This has theoretical importance as it presupposes that the successful self-regulation is associated with the management of the learning processes rather than the use of the simple cognitive strategies. When it comes to Knowledge Management, it means that gifted students are better placed to organize and manage the activities, which entail knowledge, and this can give them an edge in their academic studies and in self-directed learning.

The results are also supported by the psychometric results of the study. The reliability test indicated that the internal consistency was good in all four dimensions with Cronbach alpha values of 0.77 to 0.84 and the overall alpha of 0.88. Similarly, validity analysis showed that the scale was suitable in the current research with corrected item-total correlations of 0.42 to 0.75, KMO of 0.74 to 0.86, and statistically significant results of Bartlett Test. These results show that the Self-Regulated Learning Scale proposed by Purdie is reliable and valid in measuring self-regulated learning strategies in this sample. Consequently, the differences between gifted and non-gifted students that are being observed can be viewed with more confidence.

The correlation analysis offers further understanding of the internal framework of self-regulated learning strategies. This showed that there are strong positive correlations among all four dimensions and the strongest correlation was the one between planning and goal setting and keeping records and monitoring ($r = 0.59$, $p = 0.01$). This implies that those students who are more apt to establish goals and strategize their learning processes will also be more apt to keeping track and recording their progress. In principle, this determines that self-regulated learning is not a collection of autonomous behaviors, but is a system of learning processes that are connected. This has a bearing on Knowledge Management, in the sense that planning, monitoring, retention and help-seeking are complementary processes that go hand in hand in managing academic knowledge. Those students who excel in a single strategic area

are thus likely to be competent in others too.

The multiple regression analysis which shows that the most strongly predicting self-regulated learning strategies are to overall personalized learning further supports this interpretation. The regression model was statistically significant, $F(4, 215) = 66.94$, $p < 0.001$, and explained 55% of the variance in the dependent variable ($R^2 = 0.55$; Adjusted $R^2 = 0.54$). The best predictors included keeping records and monitoring ($\beta = 0.41$, $p < 0.001$), and then, goal setting and planning ($\beta = 0.34$, $p < 0.001$). Rehearsing and memorizing ($\beta = 0.13$, $p = 0.029$) had a minor but important role but seeking social assistance was not an important predictor ($\beta = 0.07$, $p = 0.224$). These results confirm the central theme of the study: strategic elements of self-regulated learning in general and monitoring and planning, in particular, are the most relevant elements that lead to personalized learning. This does mean that in the context of knowledge management that the best behaviors that are demonstrated by the learners are those which are oriented towards the organization of knowledge, tracking of progress and control of academic processes as opposed to being merely the storage or acquisition of knowledge by others.

Overall, the study shows that self-managed learning practices by Purdie may be considered Knowledge Management procedures on the degree of the learner. The type of knowledge work organization is setting of goals and planning, record keeping and monitoring is the evaluation and control of the course of learning, rehearsal and memorization assists in retaining knowledge and social assistance assists in accessing shared or external sources of knowledge. The fact that gifted students score higher in planning and monitoring than non-gifted students indicates that they have an advantage in managing learning strategically and not in the use of simple learning strategies. This result has significant educational implications. In case the non-gifted students need to be supported more effectively, interventions need to be targeted specifically towards enhancing the ability to set goals, plan, monitor themselves, and track progress since these are the mechanisms in which more efficient personalized learning seems to be facilitated.

7. Conclusion, Practical Implications, Limitations, and Future Research

The present research paper has elaborated the tailored learning techniques between gifted and non-gifted students using Self-Regulated Learning Scale by Purdie and stated the findings in terms of Knowledge Management. The results showed that the two groups were identical in order of application of the strategies with rehearsing and memorizing being the initial ones, then keeping record and monitoring, goal set and planning and seeking social assistance. However, all dimensions and the overall scale showed higher scores among gifted students. No significant differences were found in the goal setting and planning, maintenance records and monitoring and the overall self-regulated learning score but significant differences were found in rehearsing and memorising or seeking social assistance.

These findings imply that the main difference between gifted and non-gifted students lies in more strategic components of self-managed learning and not in mere memorization and help-seeking learning strategies. Gifted students seem to be more efficient in goal setting, organization of study tasks, recording progress, and tracking the learning outcomes. This can be construed with the aid of Knowledge Management to mean increased capabilities in arranging, organizing, tracking and evaluating academic knowledge. The study therefore supports the idea that personalized learning is not only about the presence of the learning strategies, but on whether the learner is able to use the learning strategies in a strategic manner so as to handle academic knowledge.

The results also provide concrete suggestions on educational practice. Schools and teachers should be more concerned with the improvement of goal setting and planning and record keeping and monitoring in particular with non-gifted students. Studying, self-monitoring, monitoring progress and reflective learning behaviors should be taught in the classroom and not expected to develop naturally. A Knowledge Management perspective should also be introduced into learner-centered education by curriculum designers and school leaders through fostering the ability of students to not only obtain knowledge but also to organize, track, distribute as well as use it efficiently.

The research has a number of limitations. The students of tenth grade in Jeddah, Saudi Arabia, were used as the sample, which can limit the generalizability. Also self-reported questionnaire data can cause bias in response and the descriptive comparative design does not allow interpretation as causal. In addition to this, KM was used as an interpretive construct rather than being an empirical construct that is measured directly. Further studies are then needed to understand how interventions that could help people plan and monitor their learning could be used to enhance personalized learning outcomes in various educational environments using larger and more heterogeneous samples and incorporating other contextual variables.

Reference

1. Alavi, M., & Leidner, D. E. (2001). Review: Knowledge management and knowledge management systems: Conceptual

- foundations and research issues. *MIS Quarterly*, 25(1), 107–136. <https://doi.org/10.2307/3250961>
2. Boekaerts, M. (1999). Self-regulated learning: Where we are today. *International Journal of Educational Research*, 31(6), 445–457. [https://doi.org/10.1016/S0883-0355\(99\)00014-2](https://doi.org/10.1016/S0883-0355(99)00014-2)
3. Davenport, T. H., & Prusak, L. (1998). *Working knowledge: How organizations manage what they know*. Boston, MA: Harvard Business School Press.
4. Nonaka, I., & Takeuchi, H. (1995). *The knowledge-creating company: How Japanese companies create the dynamics of innovation*. New York, NY: Oxford University Press.
5. Paris, S. G., & Winograd, P. (2003). *The role of self-regulated learning in contextual teaching: Principles and practices for teacher preparation*. Washington, DC: U.S. Department of Education, Office of Educational Research and Improvement
6. Pintrich, P. R. (1999). Understanding interference and inhibition processes from a motivational and self-regulated learning perspective: Comments on Dempster and Corkill. *Educational Psychology Review*, 11(2), 105–115.
7. Pintrich, P. R., & De Groot, E. V. (1990). Motivational and self-regulated learning components of classroom academic performance. *Journal of Educational Psychology*, 82(1), 33–40. <https://doi.org/10.1037/0022-0663.82.1.33>
8. Pintrich, P. R., & Schunk, D. H. (2002). *Motivation in education: Theory, research, and applications* (2nd ed.). Upper Saddle River, NJ: Prentice Hall Merrill.
9. Purdie, N., Hattie, J., & Douglas, G. (1996). Student conceptions of learning and their use of self-regulated learning strategies: A cross-cultural comparison. *Journal of Educational Psychology*, 88(1), 87–100. <https://doi.org/10.1037/0022-0663.88.1.87>
10. Rowley, J. (2000). Is higher education ready for knowledge management? *International Journal of Educational Management*, 14(7), 325–333. <https://doi.org/10.1108/09513540010378978>
11. Wiig, K. M. (1997). Knowledge management: An introduction and perspective. *Journal of Knowledge Management*,
12. Zimmerman, B. J. (1990). Self-regulated learning and academic achievement: An overview. *Educational Psychologist*, 25(1), 3–17.
13. Zimmerman, B. J. (1998). Academic studying and the development of personal skill: A self-regulatory perspective. *Educational Psychologist*, 33(2–3), 73–86. <https://doi.org/10.1080/00461520.1998.9653292>
14. Fariani, R. I., Junus, K., & Santoso, H. B. (2023). A systematic literature review on personalised learning in the higher education context. *Technology, Knowledge and Learning*, 28(2), 449–476. <https://doi.org/10.1007/s10758-022-09628-4>
15. Vorobyeva, K. I., Liashenko, M., Komarova, O., Danylchuk, H., Prokopenko, O., Dyba, M., & Nitsenko, V. (2025). Personalized learning through AI: Pedagogical approaches and critical insights. *Contemporary Educational Technology*, 17(3), ep632. <https://doi.org/10.30935/cedtech/16108>