

EXPLORING SELF-EFFICACY BELIEFS AND SELF-REGULATION TOWARDS AN ENHANCED COLLEGE RETENTION PROGRAM FOR DENTISTRY STUDENTS

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Abstract: Dentistry is a challenging program for students, that lack of persistence may pose an obstacle in completing the degree. This study explored the self-efficacy beliefs and self-regulation undertaken by regular and irregular preclinical students of the University of the East, College of Dentistry. Employing a cross-sectional cohort design, consenting regular and irregular students participated in the online conduct of data gathering using the Self-Efficacy and Self-Regulation Formative Questionnaires developed by Research Collaboration. Results showed no significant differences in the self-efficacy beliefs, as well as in plan and reflect components of self-regulation; but with significant differences in monitor and control components, and overall self-regulation scores between regular and irregular students. In the following semester, the students were reclassified based on whether they remained regular or irregular, or have changed from regular to irregular students, or vice-versa. Their respective self-efficacy and self-regulation scores were re-analyzed according to the reclassification. Results showed that there were no significant differences in the self-efficacy scores. However, significant differences were observed between regular-to-regular and regular-to-irregular, and between regular-to-regular and irregular-to-irregular in the control component of self-regulation. Self-efficacy beliefs of regular and irregular students, together with their subtypes were comparable. However, this was contrary to the monitor and control components of self-regulation. This study suggested that students' self-regulation should be addressed. An intervention plan "Student Adoption by Faculty for Emancipation from Retention" (SAFER) was developed to enhance the self-regulation performance of UE-CDent students that may extend their persistence. It aims to circumvent students from becoming irregular and promote irregular to become regular students.

Keywords: self-efficacy, self-regulation, persistence, regular students, irregular students.

I. INTRODUCTION

One of the crucial stages in the educational journey of dentistry students is the transition from the two-year preparatory phase to the next four years of dentistry proper. This adjustment can be very challenging for them as they learn to assume more academic tasks and responsibilities. According to Baier [1], college life ushers in a whole new environment that would require students to be more independent, ingenious and self-regulated. Their entrance to dentistry proper and their adaptation to a totally new learning experience and environment could be sometimes overwhelming to some. They may experience excitement, adventure or, at times, negative feelings of anxiety, confusion or frustration. Although dental students may initially have firm commitment to their aspiration and goal to finish the program, multitudinous factors such as eventual lack of interest and motivation, or experiences of failures from the various courses of the program can drive them to drop

out of the program. Such factors foster student retention that can lead to waning of persistence, a critical issue in higher education [2][3]. To institute measures and provide intermediation that would encourage students to persist, the University of the East (UE) has a retention policy with clear-cut guidelines regarding students' academic standing. Embodied in the policy are criteria for placing students in a warning or probationary status when they fail certain percentages of the academic units enrolled, who are now categorized as "irregular" (IR) students. The policy offers opportunities for IR students to improve their academic standing that will merit promotion to being "regular" (R) students, and eventually to the completion of the program. The College of Dentistry (CDent) earnestly implements this policy through academic advising, reduction of academic load and faculty support to help students cope with the demands of the program. However, equally important are the beliefs and behavioral skills of students, which motivate their persistence to remain in the Dentistry program.

Persistence, in the context of education, is a recurring decision of students to re-enroll from one semester to another [4]. Failure to persist is exhibited when a student drops out of school and discontinues his study. Considering the demanding nature of the dentistry program, challenging situations like failing in some courses despite exhausting hours of diligent study could drive some students to feel like quitting. Such feelings could be rooted in declining motivation that compromises the drive and willingness to perform. Predictors of persistence are self-efficacy (SE) and self-regulation (SR). While SE refers to a person's judgement of his confidence to perform a particular task, SR is the self-directive process by which learners transform their mental abilities into academic skills [5].

Self-efficacy is considered a motivational trait that emerges over a person's lifetime as an aggregate of the successes and failures experienced across domains, tasks, and situations [6]. It can be built up over time from one's past accomplishments and failures, encouragement and discouragement, vicarious learning, and physical and emotional states [6]. Learners motivate themselves by forming beliefs about what they can do, anticipating likely outcomes, setting goals, and planning courses of action. Their motivation tends to be stronger if they believe they can attain their goals and adjust them based on their progress. Learners who have high levels of SE are more persistent in the face of difficulties than those with a lower level. Also, in the case of failures or setbacks, learners with low SE tend to give up or exert less effort, whereas those with high SE generally intensify their efforts until they succeed [7]. However, SE is related to SR [8] defined as the "ability to plan, self-evaluate and adjust one's course of action for improved outcomes" [9]. According to the Pintrich's model [10], these abilities develop in four cyclical processes which start with planning and goal setting as well as activation of perceptions and knowledge of the task and the self in relation to the task; followed by monitoring processes that represent metacognitive awareness of different aspects of the self or task; controlling and regulating different aspects of the self or task; and reacting and reflecting on the self or the task. However, SR is construed as situationally specific; that is, learners are not expected to engage in SR equally in all domains. Although some self-regulatory processes may generalize across settings, learners must know how to adapt processes to specific domains and must feel efficacious about doing so [11]. Successful self-regulated learner combines strategic goal setting and planning with strong SE beliefs to set realistic goals that, when achieved, lead to greater SE and willingness to strive for loftier goals. Deficiencies in some SR processes could however compromise learners' motivation to perform, which could lead to course failures and lack of persistence.

This study evaluated the similarities and differences in the SE and SR scores between R and IR students. Further, it re-evaluated the SE and SR scores of the same students who, in the following semester, remained as R (R1) or relegated as R to IR (R2); and remained as IR (IR1) or promoted from IR to R (IR2). Using this subtype classification of students' academic status as the levels for comparison can shed more information on their persistence since the output of this study is to come up with an intervention program that could enhance the existing retention program of the College of Dentistry. This study can provide UE-CDent educators the pertinent information with regard to the student's level of SE and SR. It can also help optimize educators' strategies to increase interest and provide better students' learning experiences. It could counsel students who are already enrolled in the program, but have difficulties motivating themselves to persist in the program. Delays in finishing the program are an unnecessary waste of time, effort, money, and loss of self-esteem. Timely discernment of their SE and SR can prevent students from shifting to another program or retention. Parents will be more supportive of their child's education if favorable reports on student persistence are shown. They will also be more reassuring and understanding of the possible problems faced by their child-cum-dentistry student.

II. METHODOLOGY

This study employed a cross-sectional cohort design and observation as a data collection method. Gathered data were initially assessed under 2 groups as R and IR students during the 1st semester, SY 2019-2020, and then retrospectively evaluated under the four subtypes in the following semester. This chronological sequence enabled the documentation of the

students' SE and SR beliefs in their current academic status as R or IR, which could be the possible explanations to the subsequent similarities or differences when academic status changed to subtypes R1, R2, IR1 or IR2. Using the non-probability consecutive sampling design, one hundred thirty-eight (138) Filipino pre-clinical dental proper students enrolled in UE-CDent as 1st year, 2nd semester or 12 as they are identified in the college; 2nd year, 1st semester or 21; and 2nd year, 2nd semester or 22 during the 1st semester, SY 2019-2020 joined this study. International students, shifters from another program, transferees from other dental schools, and degree holders of other programs were excluded even if they belong to year levels 12, 21 or 22.

The study used the online Self-Efficacy and Self-Regulation Formative Questionnaires developed by Research Collaboration. The SE questionnaire measures a student's proficiency in the two essential components: belief in personal ability and belief that ability can grow with effort. It aims to make the students aware of their perceptions and beliefs about ability and how these contribute to their academic success. Students who understand that perseverance and effort can positively impact outcomes will be more confident of their ability to take on more challenging tasks in the future. The SR questionnaire, on the other hand, measures a student's proficiency in the four essential components: plan for and articulate what one wants to accomplish, immediately monitor progress and interference regarding one's goal, implement strategies to control change when things are not going as planned and reflect on what worked and what can be done better in the future. The score in each component is individually assessed, as well as the overall score. Items in both questionnaires are answered using the 5-point Likert scales ranging from a rating of 1 – "not like me" to a rating of 5 – "very like me". Summary of responses are converted to a 100-point scale to present and analyze the results in a more meaningful manner, very similar to how students interpret their scores after completing an exam [12]. Research Collaboration evaluated the internal consistency and reliability of both questionnaires. Cronbach's coefficient alpha for the self-efficacy questionnaire was $\alpha=0.894$, and $\alpha=0.896$ for the self-regulation questionnaire. Although a pilot study for the target population was considered in this study, there was no adequate required sample size to obtain reasonable power in the analyses. Instead, the researcher requested five registered guidance counselors from the University of the East to perform a thorough review of the questionnaires, who subsequently issued a certificate of instrument reliability.

Data collection took place in the CDent Auditorium in the presence of UE's registered guidance counselors who monitored the students should there be any form of stress or discomfort while answering the questionnaires, or when results of their SE and SR came out. As designed by Research Collaboration, results are immediately available to the view of the students soon after they finish answering the questionnaires. In this way, they can reflect on the results pertaining to their relative strengths or weaknesses, areas for improvement or direction to factors that lead to goals achievement. Prior to the commencement of the actual data collection, a video of a loop keynote presentation containing the title and purpose of the study, the instructions on how to go about the two questionnaires and a note of gratitude was shown. After the presentation and clarification of some questions raised by the students, the researcher provided the URL of the survey site and a survey code to access the online form. The first part of the form presented the aims, nature and benefits of the research, followed by an informed consent and related demographic profile; then the SE and SR questions. All answers were transmitted to the Research Collaboration, which provided the raw data, the translation to 100-point scale score and the corresponding interpretation. After data checking and processing, the researcher performed an initial analysis to compare the SE and SR scores between the R and IR students. Students' t-test was used for normally distributed datasets; and Mann-Whitney for the not normally distributed datasets. In the following semester, the academic status of the 138 students was revisited. All the 138 students re-enrolled, with some retaining their original academic status while others changed. This led to a reclassification of R and IR as subtypes R1,R2, IR1 and IR2. The SE and SR scores under the subtypes were re-checked, processed and analyzed to obtain a deeper evaluation of the influence of SE and SR to their persistence. Analysis of variance and multiple comparisons were used for the normally distributed datasets; and, Kruskal-Wallis and Mann-Whitney for the not normally distributed datasets.

III. RESULTS

Table 1 shows that of the total 138 students, 38% (n = 52) were R and 62% (n = 86) were IR. Ages ranged from 18 to 25, with a mean of 21 years old. In terms of gender, 81% were female (n = 112), while 19% were male (n = 26). All the students were single. Majority finished their secondary education from private schools, 91.3%, (n = 126); while 8.7% (n = 12) came from public schools. Majority of the students were in the year-level 22 (55%, n = 76), followed by 21 (30%, n=42), then 12 (15%, n = 20).

Table 1. Demographic Data of Respondents (n=138)

DEMOGRAPHIC VARIABLES	RESULTS		
Age Range	18-25 years old		
Gender	Male: 26 (19%)	Female: 112 (81%)	
Marital Status	Single: 138 (100%)	Married: 0 (0%)	
Type of High School	Public: 12 (9%)	Private: 126 (91%)	
Distribution of Students' Year Level	12: 20 (15%)	21: 42 (30%)	22: 76 (55%)
Type of Students	R: 52 (38%)	IR: 86 (62%)	

The unequal distribution of students in the demographic variables can be attributed to the informed consent requirement of the study. Although there were more students enrolled in these year levels, some opted not to participate, despite the use of non-probability consecutive sampling.

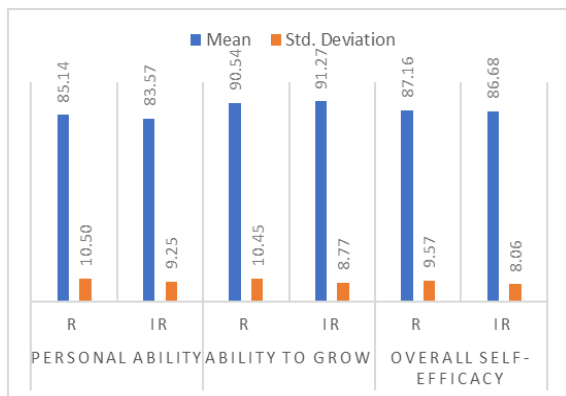


Figure 1. Mean and Standard Deviation of Self-Efficacy Components

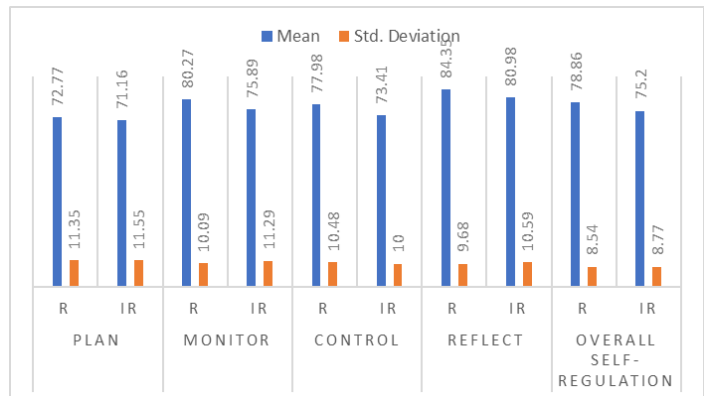


Figure 2. Mean and Standard Deviation of Self-Regulation Components

There were 2 components analyzed under SE: personal ability and ability to grow, as well as the overall self-efficacy. As shown in Figure 1, the personal ability and overall SE mean scores of R students were higher than that of the IR students. However, the mean score in ability to grow of IR students was higher than that of the R students. Figure 2 presents the SR mean scores and corresponding standard deviations under the 4 components and the overall score. It can be observed that R students rated themselves higher than the IR students in all the SR components, including the overall score.

Before performing inferential analysis, the researcher checked for the normal distribution of all datasets using the Shapiro-Wilk test of normality. All the scores under SE were not normally distributed, as well as the control and reflect components of SR. On the other hand, the plan, monitor and overall SR scores were normally distributed. Differences between the R and IR groups were tested using an independent student's t-test for normally distributed scores, while the Mann-Whitney test was utilized for the not normally distributed scores.

Table 2. Mann-Whitney Test of Self-Efficacy Scores

SE Component	Respondent	N	Mean Rank	Sum of Ranks	Z	Asymp. Sig. (2-tailed)
Personal Ability	R	52	74.74	3886.5	-1.202	0.229
	IR	86	66.33	5704.5		
	Total	138				
Ability to Grow	R	52	69.22	3599.5	-0.065	0.948
	IR	86	69.67	5991.5		
	Total	138				
Overall Self-Efficacy	R	52	72.75	3783	-0.744	0.457
	IR	86	67.53	5808		
	Total	138				

To test if differences exist in the SE scores between R and IR students, the researcher used the Mann-Whitney test to compare the mean ranks. Table 2 shows that even if the mean ranks appeared to differ between the 2 groups, there were no

significant differences in the personal ability ($z = -1.202, p=.229$) and ability to grow ($z = -.065, p = .948$) components, as well as in the overall ($z = -.744 = .457$). Despite the difference in the academic status, it appears that R and IR students had comparable self-efficacy attributes.

Table 3. Mann-Whitney Test of Scores in Control and Reflect Components of Self-Regulation

SR Component	Respondent	N	Mean Rank	Z	Asymp. Sig. (2-tailed)
Control	R	52	81.63		
	IR	86	62.16		
	Total	138		-2.787	*0.005
Reflect	R	52	77.25		
	IR	86	64.81		
	Total	138		-1.783	0.075

Mann-Whitney test for the mean ranks of control component scores in SR (Table 3) demonstrated a significant difference between the R and IR students ($z = -2.787, p = .005$). The mean rank of the scores of R students (Mean=81.63) was significantly higher than that of the IR students (Mean=62.16). However, there was no significant difference in the mean ranks of the reflect component ($z = -1.783, p = .075$) between the groups.

Table 4. Independent Student’s t-test of Scores in Plan, Monitor Components and Overall Self-Regulation

SR Components	Levene's Test for Equality of Variances		t-test for Equality of Means		
	f	Sig.	t	df	Sig. (2-tailed)
Plan	0.283	0.595	0.795	136	0.428
Monitor	0.647	0.423	2.297	136	*0.023
Overall Self-Regulation	0.054	0.816	2.402	136	*0.018

Student’s t-test of scores (Table 4) in plan component showed no significant difference between the groups, $t(136) = .795, p = .428$. There were, however, significant differences in the monitor component, $t(136) = 2.297, p = .023$, as well as in the overall self-regulation scores, $t(136) = 2.402, p = .018$. Regular students had higher monitor scores (Mean=80.27) and overall SR scores (Mean=78.86) compared to the IR students (Mean=75.89 and 75.2, respectively).

In the following semester, the researcher examined the academic status of the 138 students. All of the students re-enrolled in the 2nd semester-SY 2019-2020 but with noticeable changes in their academic status. While some retained their original academic status, others either improved or regressed, which generated 4 subtypes as R1 (n=37), R2 (n=15), IR1 (n= 77) and IR2 (n=9).

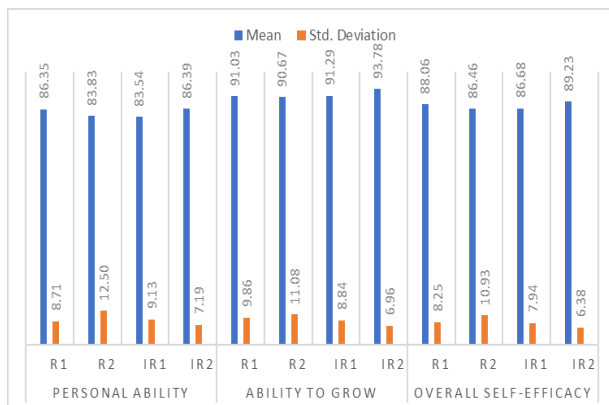


Figure 3. Mean and Standard Deviation of Self-Efficacy Components

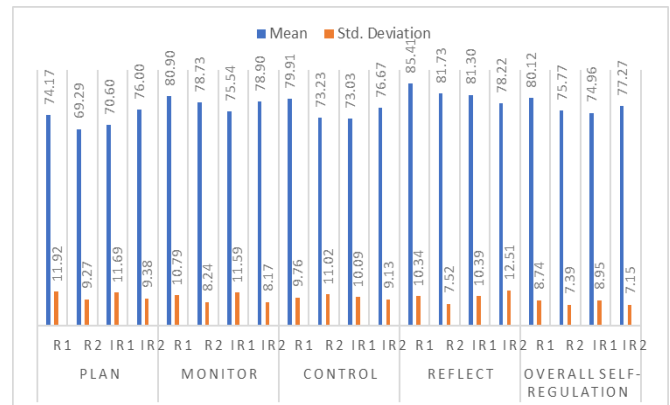


Figure 4. Mean and Standard Deviation of Self-Regulation Components

It can be gleaned from Figure 3 that IR2 and R1 had the highest mean scores in personal ability; IR2 and IR1 in ability to grow; and IR2 and R1 in overall self-efficacy. Figure 4 shows that R1 and IR2 had the highest mean scores in control component and overall SR; IR2 and R1 in plan; R1, IR2 and R2 in monitor; and R1 and R2 in reflect component. Shapiro-Wilks normality tests of the score distribution showed that all the SE components; and the plan, control and reflect components of SR were not normally distributed. Only the monitor component and overall SE were normally distributed. Differences among the 4 groups were tested using One-way ANOVA test for normally distributed scores, and Kruskal-Wallis test for the not normally distributed scores.

Table 5. One-way ANOVA test of Monitor Component and Overall Self-Regulation Scores

	MONITOR				OVERALL SELF-REGULATION			
	df	Mean Square	F	Sig.	df	Mean Square	F	Sig.
Between Groups	3	254.511	2.146	0.097	3	226.782	3.036	*0.031
Within Groups	134	118.613			134	74.701		
Total	137				137			

One-way ANOVA test in Table 5 shows that scores in the monitor component were not significantly different among the subtypes, $F(3, 134) = 2.146, p = .097$. However, a significant difference was found in the overall SR scores among the subtypes, $F(3, 134) = 3.036, p = .031$.

Table 6. Multiple Comparison of the Differences in Overall Self-Regulation Scores

	(I) subtype	(J) subtype	Mean Difference	Std. Error	Sig.
Tukey HSD	R1	R2	4.35	2.6456	0.357
		IR1	5.16	1.7289	*0.018
		IR2	2.85	3.2123	0.811
	R2	IR1	0.81	2.4393	0.987
		IR2	-1.50	3.6442	0.976
	IR1	IR2	-2.31	3.0447	0.873

Multiple comparisons of the overall SR scores (Table 6) showed that only R1 (Mean=80.12) and IR1 (Mean=74.96) significantly differed, $p = .018$.

Table 7. Kruskal-Wallis Test of Self-Efficacy Components, Plan, Control and Reflect Self-Regulation Components

	Personal Ability	Ability to Grow	Overall Self-Efficacy	Plan	Control	Reflect
Chi-Square	3.149	0.422	1.849	4.4	12.333	5.357
df	3	3	3	3	3	3
Asymp. Sig.	0.369	0.936	0.604	0.2	*0.006	0.147

For the non-normal score distributions, Kruskal-Wallis test (Table 7) revealed that only the control component of SR was significantly different, $\chi^2(3) = 12.33, p = .006$. Overall SE and its components, including plan and reflect components of SR scores were not different.

Table 8. Mann-Whitney test of Self-Regulation's Control Component

Subtype	R1		R2		IR1		IR2	
	Z-value	Sig.	Z-value	Sig.	Z-value	Sig.	Z-value	Sig.
R1	-	-	-1.971	*0.049	-3.405	*0.001	-1.157	0.247
R2	-1.971	*0.049	-	-	-0.393	0.694	-0.39	0.697
IR1	-3.405	*0.001	-0.393	0.694	-	-	-1.072	0.284
IR2	-1.157	0.247	-0.39	0.697	-1.072	0.284	-	-

Using Mann-Whitney test (Table 8) to compare the mean ranks of the 4 subtypes in the control component, significant differences were observed between R1 (88.36) and R2 (65.07), $z = -1.971$, $p = .049$, and between R1 and IR1 (60.77), $z = -3.405$, $p = .001$.

IV. DISCUSSION

This study evaluated the SE and SR scores of R and IR dentistry students who were enrolled as 12, 21 and 22 during the 1st semester, SY 2019-2020, and of the subtypes R1, R2, IR1 and IR2 in the following semester. Findings showed no difference in the SE between the R and IR students, as well as among the subtypes R1, R2, IR1 and IR2. These results can be attributed to the shared experiences and absolute judgments they have of their academic capabilities from the different mechanisms by which their beliefs were formed during their 2-year preparatory prior to the dentistry proper program. The judgments of their current ability to perform emerged as an aggregate of the successes and failures experienced across tasks and situations during their pre-dentistry years. Further, students could develop and modify their SE by vicarious experience, social persuasions, physiological and emotional states, and mastery experience, which is the most powerful source of SE [7], [13]. Having succeeded in their pre-dentistry years, this must have provided them with a certain degree of mastery experience and reinforced their beliefs of being well-equipped to handle the challenges of the dentistry proper program; and that they can emerge successfully from the mastery of their previous experiences, especially among those who have had academic failures.

Although experiencing academic failures did not spell any difference in SE beliefs between R and IR, and among the subtypes, there were differences in the monitor and control SR components between R and IR; and, in the control component between subtypes R1 and R2 and, between subtypes R1 and IR1. Monitoring is a critical component of SR because it provides awareness of one's knowledge level which then leads to changes in one's affect, cognition, and behavior [10]. Although potentially motivated, IR students may lack the relevant knowledge and skill, have difficulty identifying which strategies to employ to enhance performance and even difficulty in organizing a variety of relevant strategies in a manner that will enable them to self-regulate their learning. Control component is not separate from monitoring. Students with strong monitoring skills are able to identify and discern which strategies work to improve performance. To adopt strategies that work, they are able to modify, control and regulate the different aspects of the performance to accomplish the many tasks required of them [14]. These could be the characteristics that are deficient among the IR students and inadequate among the R2 and IR1 students.

It is common knowledge that dentistry is a challenging program. A student population composed mainly of R students in this program is a sign of students' success that translates to persistence and less retention. However, as students proceed into higher and more difficult academic year levels, some fail to maintain their R status. Despite becoming IR, R2 or remaining as IR1, the dentistry students demonstrated persistence as they continued to enroll in the program. This can be attributed to their SE beliefs in their personal abilities and in their ability to improve themselves. However, among the SR components, monitor and control mechanisms should be addressed to maintain their persistence.

V. CONCLUSION

The SE beliefs of the students belonging to R and IR, together with their subtypes were comparable. However, this was contrary to the monitor and control components of SR, which were deficient among the IR students and inadequate among the R2 and IR1 students. When these components are addressed, they could become self-regulated learners who are able to combine their SE beliefs in setting realistic goals; and, monitoring, controlling and reflecting on the different aspects of their actions. When cyclically undertaken, it could lead to greater SE, willingness to strive for higher goals and adaptation to the corresponding SR skills demanded by the greater goals.

As an output of this study, the researcher developed an intervention plan to enhance the self-regulation performance of UE-CDent students that may extend their persistence. The program, "Student Adoption by Faculty for Emancipation from Retention" (SAFER), aims to circumvent students from becoming IR and promote IR to R students.

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REFERENCES

- [1] Baier, S.T. (2014). The role of academic factors, self-efficacy, mentoring relationships, and learning communities in persistence and academic success of freshmen college students. Wayne State University.
- [2] Tinto, V. (1993). Leaving college: Rethinking the causes and cures of student attrition (2nd ed.). Chicago: University of Chicago Press.
- [3] Aljohani, O. (2016). A comprehensive review of the major studies and theoretical models of student retention in higher education. *Higher Education Studies*, 6(2), 1-18.
- [4] Pascarella, E. and Terenzini, P. (2005). *How College Affects Students: A Third Decade of Research*. Jossey-Bass, An Imprint of Wiley. Vol.2.
- [5] Zimmerman, B. J. (2002). Becoming a self-regulated learner: An overview. *Theory into Practice*, 41(2), 64-70.
- [6] Bandura, A. (1977). Self-efficacy: toward a unifying theory of behavioral change. *Psychological Review*, 84(2), 191-215.
- [7] Bandura, A., & Cervone, D. (1983). Self-evaluative and self-efficacy mechanisms governing the motivational effects of goal systems. *Journal of Psychology and Social Psychology*, 45(5), 1017-1028.
- [8] Ghonsooly, B. and Ghanizadeh, A. (2011). Self-efficacy and self-regulation and their relationship: A study of Iranian EFL teachers. *Language Learning Journal*, 41(1), 1-17.
- [9] Gaumer Erickson, A.S., & Noonan, P.M. (2021). Self-regulation assessment suite: Technical report. College & career competency framework. <http://cccframework.org>
- [10] Pintrich, P. R. (2000). The role of goal orientation in self-regulated learning. *Handbook of self-regulation*. Academic Press.
- [11] Schunk, D. H., & Zimmerman, B. J. (2013). Self-regulation and Learning. In W.M. Reynolds, G. E. Miller, & I. B. Weiner (Eds.), *Handbook of Psychology: Educational Psychology*. John Wiley & Sons, Inc.
- [12] Gaumer Erickson, A. S. and Noonan, P. M. (2018). The skills that matter: Teaching interpersonal and intrapersonal competencies in any classroom. Thousand Oaks, CA: Corwin, 177-178.
- [13] Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Englewood Cliffs, NJ: Prentice-Hall.
- [14] Zimmerman, B. J. (2008). Investigating self-regulation and motivation: Historical background, methodological developments, and future prospects. *American Educational Research Journal*, 45(1), 166-183.